DISSERTATION ON

"A STUDY TO ASSESS THE EFFECTIVENESS OF BLOWING TARTY WHISTLE AS A PLAY WAY METHOD OF BREATHING EXERCISE ON PREVENTION OF POST-OPERATIVE RESPIRATORY PROBLEMS AMONG THE CHILDREN AGE GROUP OF 6-12 YEARS WHO UNDERWENT ABDOMINAL SURGERY IN SELECTED POST OPERATIVE WARD AT INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN, CHENNAI."

M.Sc (Nursing) Degree Examination

BRANCH - II – CHILD HEALTH NURSING

COLLEGE OF NURSING

MADRAS MEDICAL COLLEGE, CHENNAI – 600 003

A dissertation submitted to

THE TAMILNADU DR. M.G.R. MEDICAL UNIVERSITY, CHENNAI-32

in partial fulfillment of the requirement for award of the degree of

MASTER OF SCIENCE IN NURSING

APRIL 2016

"A study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post-operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at Institute of Child health and hospital for children, Chennai"

Approved by the Dissertation Committee on 21.10.2014

RESEARCH GUIDE ……

Dr.V. Kumari , M.Sc (N).,PhD.,
Principal,
College of Nursing,
Madras Medical College, Chennai – 600 003.

SPECIALTY GUIDE ……

Mrs. P.K. Santhi, M.Sc (N).,
Lecturer,
Department of Child Health Nursing,
College of Nursing
Madras Medical College, Chennai – 600 003.

EXPERTS IN MEDICINE ……

Dr. J. Muthukumar, **M.S., M.ch.,**
HOD and professor in pediatric surgery
Institute of Child Health and Hospital for Children
Egmore, Chennai – 600 008.

A dissertation submitted to
The Tamilnadu Dr. M.G.R. Medical University, Chennai
in partial fulfillment of the requirement for award of the degree of
Master of Science in Nursing

APRIL 2016

CERTIFICATE

This is to certify that this dissertation titled **A study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post-operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at Institute of Child health and Hospital for children, Chennai,** is the bonafide work done by Mrs. Rajendran Shanthi II year M.Sc (N) student submitted to **The Tamilnadu Dr.M.G.R Medical University, chennai-32** towards the partial fulfillment of the requirements for the award of the Degree of **Master of Science in Nursing,** Branch-II Child Health Nursing, under our guidance and supervision during the academic period from 2014-2016.

Dr.V.Kumari M.Sc(N).,PhD.,
PRINCIPAL,
College of nursing,
Madras Medical College,
Chennai-03.

Dr.R.Vimala MD.,
DEAN,
Madras Medical College,
Chennai-03.

ACKNOWLEDGEMENT

Gratitude calls never expressed in words but this only to deep perceptions, which make words to flow one's inner heart.

First of all I thank the GOD ALMIGHTY for his abundant blessing showered on me which helped me to complete the study successfully.

This dissertation work was conducted with the assistance of many professional experts. The investigator is whole-heartedly indebted to her research advisors for their comprehensive assistance in various forms.

I wish to express my sincere thank to the **Dr.R.Vimala, M.D.,** Dean**,** Madras Medical College, Chennai-3 for providing necessary facilities and extending support to conduct this study.

I immensely extend my gratitude and thanks to **Dr.V.Kumari, M.Sc (N).,PhD.,** Principal, college of Nursing, Madras Medical College, Chennai-3 for her support, constant encouragement and valuable suggestions helped in the fruitful outcome of this study.

I extend a special thanks to **Mrs.J.S.Elizabath kalavathy, M.Sc(N).,** vice principal, college of nursing, Madras Medical College, Chennai-3 for her advice and encouragement in completing the study.

I deem it a great privilege to express my sincere gratitude and deep sense of indebtedness to my esteemed teacher **Mrs.P.K.Santhi, M.Sc(N).,** Lecturer, college of Nursing, Madras Medical College, Chennai-3 for her timely assistance and guidance in pursuing the study.

I offer my earnest gratitude to **Mrs.P.Savithri, M.Sc(N).,** Lecturer, College of Nursing, Madras Medical College, Chennai-3 for her encouragement, valuable suggestions support and advice given in this study.

I express my thanks to all the **faculty members** of the College of Nursing, Madras Medical College, Chennai-3 for the support and assistance given by them in all possible manners to compete for this study.

I wish to express my special and sincere heartful thanks to **Dr.S.Sundari, M.D.,DCH,** Director and superintendent, Institute of Child Health and Hospital for children, chennai-08.

I extend my sincere thanks to **Mr.A.Venkatesan,M.Sc (statistics), P.G.D.C.A.,** Lecturer in Statistics , Madras Medical College, Chennai-03 for suggestions and guidance in statistical analysis.

I extend my thanks to **Mr. Ravi, B.A., B.L.I.Sc,** Librarian, College of Nursing, Madras Medical College, Chennai-3 for his co-operation and assistance which built the sound knowledge for this study.

Above all the investigator would like to express her deepest gratitude to all the staff members who worked in the post operative ward, specially the Mothers who had, enthusiastically participated in this study, without whom it was not possible for her to complete this study.

I thank **Mr,Syed Hussain, B.Sc(com) and Mr.Ramesh, B.A,** for their help utilizing patience in printing the manuscript and completing the dissertation work.

As a final note, my sincere thanks and gratitude to all my friends and relatives who directly or indirectly helped me in the successful completion of this study.

LIST OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS

PP	Postoperative problems
POM	Pulse oxymeter
HSC	Higher secondary course
ARI	Acute respiratory infection
UAS	Upper abdominal surgeries
ICH	Institute of Child health
n/N	Frequency/Number of subjects
%	Percentage
P	Probability level
T	Assessment of significance
H	Hypothesis
SD	Standard deviation
Df	Degrees of freedom

ABSTRACT

TITLE: A study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post-operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at Institute of Child health and hospital for children, Chennai.

Pediatric surgery is much different from general surgery, even though the basic principles of surgery are the same. When compared to adults, the pediatric clients react or respond differently in surgery. The surgeries performed in children may be diagnostic, exploratory, curative and palliative etc. Careful post-operative monitoring is essential for a successful outcome of surgery. The main aim of care in the post-operative period is prevention of complications, early identification, and effective treatment of post-operative complications.

Need for the study: Post-operative respiratory problems are higher in children with major life threatening events occurring in about 4% of children and in adult it is 0.5%. Breathing exercise had been found to be effective in strengthening the respiratory muscles during post-operative period. Teaching patients about breathing exercises can prevent respiratory problems due to abdominal surgeries.

Objectives: The main objective of the study was to evaluate the effectiveness of blowing tarty whistle as a breathing exercise on the level of respiratory problem among experimental group.

Key words: tarty whistle, post-operative respiratory problems.

Methodology:

Research approach: Quantitative research approach

Research design: Quasi experimental design.

Sampling technique: Purposive sampling technique.

Study population: Children of both sexes underwent abdominal surgery, age group between 6-12 years

Sample size: 60 **(** 30 for experimental group and 30 for control group)

Study setting: Post-operative ward at ICH, Chennai

Data collection procedure: A blowing tarty whistle was given to experimental group (30) for 10 minutes each session, four times a day for five consecutive days. Normal breathing exercise was given to the control group (30) for 5 days. 6^{th} day the child's respiratory status was observed and measured by using respiratory status assessment scale for both the groups.

Data analysis: The data was analyzed with descriptive statistics like mean, standard deviation, frequency and percentage. Inferential statistics like Pearson Chi-square test, paired't' test and unpaired't' test. $P \leq 0.05$ was considered statistically significant.

Discussion: The findings of the study revealed that the computed pre-test't' value between experiment and control group was not significant (t=0.33, P=0.73, df=58) whereas the computed post-test 't' value between experiment and control groups was significant (t=6.61, P=0.001, df=58).The mean post-test value was lower in experiment group (0.47) when comparing to the control group (2.60). This shows that there was significant reduction in postoperative respiratory problems after blowing tarty whistle. Thus the hypothesis was statistically proved.

Conclusion: Breathing exercise in the form of blowing tarty whistle was found to be very effective in the prevention of postoperative respiratory problems in children, but it needs more practice and supervision to improve the quality of care. Nursing personnel must educate the children and parents about the appropriate breathing exercise methods.

CHAPTER – I

INTRODUCTION

"The welfare of today's children predicts the health and the welfare of the community tomorrow."

_ *Gandhiji*

A child is an important asset to his family and the society and he is a precious gift with lots of potential, and they are the best resources for the nation. A child is a unique individual; he or she is not a miniature adult, not a little man or woman. The childhood period is vital because children are vulnerable to diseases, disability and death owing to their age, sex, place of living, socio-economic status and a host of other variables.

Children are major consumers of health care. In India, about 35% of total population is children below 15 years of age. They are not only large in number but vulnerable to various health problems. Majority of the childhood health problems and death are preventable by simple low cost measures.

Post-operative respiratory problems:

Respiratory failure is either a major cause or a major contributing factor in 50% of postoperative deaths. Anesthesia and medication result in some degree of respiratory problems in post-operative patients.

Pasteur in 1908 was the first to recognize post-operative pulmonary complications in the post-operative patients. Transient hypoxemia is a common finding in the early post-operative hours noted by Overholt in 1930.in 1952, palmer stated that atelectasis was the most common post-operative respiratory problems and it remains so today.

The primary cause of post-operative respiratory problems include hypoventilation caused by obstruction of airways by secretions, decreased activity of the respiratory muscles and decreased expiratory reserve volume, which are due to the administration of pre-operative medications, anesthetic agents and drugs given in the intra-operative period.

The common respiratory problems occur in post-operative period are bronchitis, atelectasis, pneumonia, and respiratory infections. Abdominal and thoracic surgeries are at increased risk of having respiratory problems rates ranging from 30 to 40%.

Breathing exercises in prevention of post-operative respiratory problems:

It is known that surgical procedures in the upper abdominal area promote changes in pulmonary function and respiratory mechanics, leading to postoperative pulmonary complications (PPCs). Some of the main changes that lead to PPCs are: (a) decreased diaphragm mobility; (b) depressed central nervous system; (c) changes in the ventilation-perfusion ratio; (d) reduced cough efficacy; (e) increased respiratory rate; and (f) reduced pulmonary volumes and capacities. The most common complications due to these changes are atelectasis, hypoxemia, and pneumonia, which can affect up to 80% of patients submitted to upper abdominal surgery (UAS), increasing the length of hospital stay and treatment costs and contributing significantly to mortality.

Routinely used by physical therapists in clinical practice, breathing exercises involve breathing patterns that can be combined with upper limb and trunk movements, as well as thoracic cage maneuvers. These exercises aim to improve the patient's breathing pattern and increase lung expansion, respiratory muscle strength, functional residual capacity, and inspiratory reserve volume, thus preventing or treating PPCs. Understanding the effect of these exercises is of

fundamental importance to physical therapists as this knowledge will help them to select the best interventions for patients submitted to UAS. Nevertheless, the effectiveness of breathing exercises is rarely investigated. Thus, the objective of the present study was to undertake a systematic review of randomized and quasi-randomized studies that assessed the effects of breathing exercises on the recovery of pulmonary function and prevention of PCCs after UAS.

Techniques of chest physiotherapy and breathing exercises have been used since the early 1900s to decrease post-operative respiratory problems. In 1915, Mac Mahon first described chest physiotherapy and breathing exercises to prevent post-operative respiratory problems. Supplemental oxygen, deep breathing, and coughing are routinely used to prevent Postoperative pulmonary complications. Despite these preventive efforts patients develop post-operative pulmonary complications (including atelectasis, which makes up 90 percent of post-operative pulmonary complications).

1.1. Need for the study:

Healthy children brought up in healthy surroundings not only are source of joy to everyone, but will be India's greatest resource tomorrow. Children are not 'little adults' they are in a dynamic process of growth and development, and are particularly vulnerable to acute and chronic effects of pollutants in their environmental, which leads to diseases like acute respiratory infections(ARI), diarrhea etc. Among these infectious diseases ARI is one of the leading causes of mortality and morbidity in young children.

Pediatric surgery is one of the branches in the field of medicine that deals with the surgical care of new born babies, infants and children up to the age of 18 years.

The common abdominal surgeries performed in children were appendicectomy, cholecystectomy, herniorraphy, laparotomy, colostomy, gastrostomy and pyloromyotomy etc. 25-50 % of post operative complications occur in major surgeries. In upper abdominal surgeries the respiratory complications are nearly 40- 70 %.

Paulo (2009) said that breathing exercises during the immediate post-operative period following abdominal surgery was effective in improving the respiratory status and oxygen-hemoglobin saturation.

Elizabeth Westerdahl et.al (2009) said that patients who performed breathing exercises after abdominal surgeries showed a significantly smaller amount of atelectasis and has better pulmonary function on the fourth post-operative day compared to patients who performed no breathing exercises.

Burden of the diseases:

Table 1.1: Statistics of General surgeries done at the surgical units at ICH, Chennai-08

Unit	Elective			Emergency		
	Major	**Minor**	**Total**	**Major**	**Minor**	**Total**
SI	616	32	648	187	239	426
S11	556	34	590	217	308	525
S111	469	34	503	220	279	499
S1V	503	64	567	148	236	384

Age group	Treated cases		Total
	Male	Female	
3-5 years	2836	1787	4623
5-10 years	5021	3482	8503
10-12 years	2222	1338	3560

Year	Total operations performed	Major	Minor
2014	17032	7177	9855

The table 1.1 shows that surgeries done at surgical units at ICH, Chennai-08 on 2014.Data from the institute of child health and hospital for children at Chennai-08. During the year 2014, there were 36712 admissions in surgical unit among which 7177 major and 9855 minor surgeries performed. In post operative ward at ICH, Egmore-08, 48% children were discharged between 7-8 days, and 30% children were discharged between 4-6 days. This prolonged hospital stay may be due to improper pre-operative care and the outcome depends upon the general condition of the children. Prolonged stay cause cost effectiveness. Careful monitoring of post-operative period by administering quality therapeutic intervention may reduce the prolonged hospital stay. So researcher view point is simple blowing tarty whistle respiratory exercise may reduce the postoperative respiratory problems.

Deep breathing is often encouraged when the child is relaxed in the desired position for drainage. The child is directed to take several deep breaths using diaphragmatic breathing. The use of deep breathing enlarges the trachea bronchial tree- enabling air in to circulate around and through secretions that are not affected by usual tidal volumes. Expirations after the deep breaths often causing secretions and may stimulate a cough. Other methods that can be employed to stimulate deep breathing are blow bottles of various types. Incentive spirometer, and

incorporation of play that extents the expiratory time and increased expiratory pressure.

For e.g. such play may include using items such as pinwheel toys, moving items by blowing through a straw, blowing cotton balls, or a ping-pong ball on a table, preventing a tissue from falling by blowing it against a wall, blowing up balloon and singing loudly. The goal is to develop more effective diaphragmatic and lower intercostals breathing. Relax all muscles, especially those of the upper chest, shoulder girdle, and neck and attain a good easy posture.

As above stated researches views, and also based on the reviews and literature statistics, incidence and prevalence rate, the investigator felt the definite need for the prevention of post operative respiratory problems among children who underwent abdominal surgery at post operative ward at Institute of Child health and hospital for children, Chennai, by providing blowing tarty whistle as a play way method of deep breathing exercise and its effectiveness also help them to improve the quality of life of the children and finally to help our community to achieve the goal, the health for all by 2010.

1.2. Statement of the problem:

A study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post-operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at Institute Of Child health and hospital for children, Chennai.

1.3. Objectives of the study:

The objectives of the study are to,

1. assess the pre-test respiratory status of the children who underwent abdominal surgery at Post-operative ward for both experimental and control group .
2. assess the post-test respiratory status among children who underwent abdominal surgery at post operative ward for both experimental and control group.
3. compare the pre and post-test level of respiratory status between experimental and control groups.
4. evaluate the effectiveness of blowing tarty whistle as a breathing exercise on the level of respiratory problem among experimental group.
5. associate the post-test respiratory score with selected demographic variables.

1.4. Operational definition:

Effectiveness

In this study, effectiveness refers to an intended or expected result produced from the breathing exercise as measured by respiratory status assessment scale.

Breathing exercise

In this study it refers to a specific number of blowing exercises designed to improve respiratory efficiency, promote expansion of the lungs and strengthen respiratory muscles of the children by giving blowing tarty whistle.

Blowing tarty whistle

It is a kind of exercise which is given in the form of play with the help of a blowing tarty whistle.

Play way methods

To occupy oneself in amusement, sports or other recreation.

Respiratory status

This is an assessment done in the observational check list of respiratory status assessment scale which consists of 10 respiratory features.

Post-operative respiratory problems

It refers to the unwanted respiratory problems of children due to the effects of general anesthesia and abdominal surgeries. The respiratory problems are respiratory infections, pneumonia, bronchitis and atelectasis.

Post-operative children

It refers to the children aged between 6-12 years, who had undergone abdominal surgery under general anesthesia.

Abdominal surgery

It refers to the major surgeries of the abdominal viscera.

1.5. Assumptions:

1. Most of the children who had abdominal surgery under General anesthesia may experience respiratory distress.
2. Breathing exercises may be effective in promoting lung expansion which in turn leads to reduction of unwanted secretion and also improve the strength of respiratory muscles.

3. Breathing exercises may be effective in reducing post-operative pain.
4. Breathing exercises with blowing tarty whistle may make the session interesting to the children.

1.6. Hypotheses:

H_1: There will be significant difference between the pre-test and post-test respiratory status of children (6-12 years) underwent abdominal surgery at selected post-operative ward.

H2: There will be significant improvement in respiratory status of children In the experimental group after breathing exercise in comparing with control group.

H3: There will be a significant association between the post-test respiratory status of children who underwent abdominal surgeries with the selected demographic variables.

1.7. Delimitations:

1. The duration of study is limited to four weeks.
2. Children of 6-12 years of age group who were admitted in pediatric post-operative ward in ICH, Chennai.

CHAPTER - II

REVIEW OF LITERATURE

According to Polit and Hungler the task of reviewing research literature involves the identification, selection, critical analysis and written description of existing information on the topic. Related literature on post-operative respiratory problems which one received is described under the following headings.

2.1. Review of related literature:

- Studies related to the post-operative respiratory problems.
- Studies related to the breathing exercises.

Study related to the post-operative respiratory problems:

Brooks –brunn (2006) studied atelectasis and infectious complication account for the majority of reported pulmonary complication. Risk factors were thought to exaggerate pulmonary complications, which occurred during and after surgical procedures. 18 risk factors were received regarding their pathophysiology. They concluded that identification of risk factors and predictions of post-operative pulmonary complications are important. Early identification of patient at risk for post-operative pulmonary complication can guide respiratory care to prevent or minimize those complications.

Nicholas S Hill (2006) conducted a study on pulmonary rehabilitation program to restore the functional capabilities as much as possible. They suggested that pulmonary rehabilitation decreases the sensation of dyspnea increases functional exercise capacity and improves the quality of life of patients who suffers with severe pulmonary impairment. Breathing techniques are included in most of the rehabilitation program and considered a routine component of pulmonary rehabilitation.

Edwin Trayner and Bartolone R. Celli (2009) stated that the physician involved in the management of patients undergoing surgery needs to be aware that post-operative pulmonary complications are a major cause of morbidity, mortality, prolonged hospital stay, and increased cost of care. Pneumonia, bronchitis, lobar atelectasis, respiratory failure, and prolonged mechanical ventilation are among the major pulmonary complications. The prevalence of these complications depends on a variety of risk factors, which may be divided broadly into patient-related and procedure- related factors. Strategies aimed at preventing post-operative complications have the potential to decrease morbidity and mortality and improve resource use. Pulmonary risk indices, pulmonary function testing, cardiopulmonary exercise testing, and stair climbing all have been used to assign pre-operative risk in patients undergoing elective surgery.

P.J.Canet and Mazo V (2010) stated that post-operative pulmonary complications (PPC) account for a substantial proportion of morbidity and mortality related to surgery and anesthesia and lead to longer hospital stay. The incidence of PPC varies depending on the clinical treatment setting, the kind of surgery studied, and the definition of PPC used. For all of these reasons, incidence rates vary dramatically, ranging from 2% to 40%. The factors affecting the development of PPC are related to the prior health status of the patient and the effects of anesthesia and surgical trauma. Age, general co- morbidity, nutrition, fluid overload, pre-existing respiratory and cardiac diseases, the use of general anesthesia and the overall surgical insult are the most significant factors associated with post-operative pulmonary complications.

Donald S. King(2010) said that the surgical service of any large general hospital is still faced with the problem of prevention of post-operative pulmonary complications. The numerous studies made during the past fifteen years have consistently shown the frequency of these complications. Many theories have been proposed regarding the etiology and treatment of them, but none have been

accepted as entirely satisfactory. Certain facts, however, are becoming definitely established and an intensive study made during the past two years, has given new emphasis to some of these points. Statistical observations have shown that: an overwhelming majority of post-operative pulmonary complications occurs after laparotomy and herniorraphy (14.0%) ; they are especially frequent after operations on the stomach, gallbladder and intestines (40.2, 18.8 and 20.8%, respectively); they occur at least twice as frequently in men as in women.

Post-operative pulmonary complications are an important part of the risk of surgery and prolong the hospital stay by an average of one to two weeks. 1 Much of the literature on the assessment of perioperative risk has focused on identifying the now well-defined cardiac risk factors. However, clinically significant post-operative pulmonary complications are as common as post-operative cardiac complications. According to one review, pulmonary complications were at least as common as or more common than cardiac complications in 17 of 25 studies of post-operative complications. This article reviews patient- and procedure-related risk factors, clinical evaluation, pulmonary-function testing, and risk-reduction strategies. The evaluation of candidates for lung resection has been reviewed extensively and is not discussed here.

Various breathing control exercises (BCEs) and respiratory muscle training (RMT) are being used to improve breathlessness. For example, BCEs include diaphragmatic breathing (DB), pursed-lip breathing (PLB), relaxation techniques (RT), and body position exercises (BPEs). BCEs aim to decrease the effort required for breathing and assist relaxation by deeper breathing, which may result in an improved breathing pattern through decreased respiratory rate and reduced breathlessness. In regard to RMT, the aim is to improve muscle strength and endurance where the respiratory muscles are impaired, hopefully resulting in greater effort to control breathing pattern and reduce breathlessness. RMT requires a training program using an adjusted breathing resistance device.

Studies related to the breathing exercises

Hulzebos. E.H.etal (2006) explains that deep and slow inspiration is consider being a therapeutic breathing exercise. Deep inspiration initiates yawn or sigh mechanism promotes increasing Trans pulmonary pressure and when associated with a post inspiratory pause leads to greater alveolar stability, which can justify the use deep and slow inspiration in the prevention of post-operative respiratory problems.

Erik . H et al. (2006) conducted as study to evaluate the prophylactic efficiency of pre-operative inspiratory muscle training the incidence of post-operative pulmonary complication. Finding of their study were pre operative inspiratory muscle training reduces the incidence of post-operative pulmonary complication and duration of the post-operative hospitalization in patient at high risk of developing postoperative pulmonary complications after cardiac surgery.

Garrod R, Lasserson T (2007): Four Cochrane respiratory reviews of relevance to physiotherapeutic practice are discussed in this overview. Physiotherapists aim to improve ventilation for people with respiratory disease, and approach this using a variety of techniques. As such, the reviews chosen for discussion consider a wide range of interventions commonly used by physiotherapists: breathing exercises, bronchopulmonary hygiene techniques and physical training for peripheral and respiratory muscles. The reviews show that breathing exercises may have beneficial effects on health related quality of life in asthma, and that inspiratory muscle training (IMT) may improve inspiratory muscle strength. However, the clinical relevance of increased respiratory muscle strength per se is unknown, and the longer-term effects of breathing exercises on morbidity have not been considered.

One review clearly shows that bronchopulmonary hygiene techniques in chronic obstructive pulmonary disease (COPD) and bronchiectasis increase sputum production. Frequent exacerbation is associated with increased sputum and high bacterial load, suggesting that there may be important therapeutic benefit of improved sputum clearance. Future studies evaluating the long-term effects of bronchopulmonary hygiene techniques on morbidity are recommended. In the third review, the importance of pulmonary rehabilitation in the management of COPD is once again reinforced. Physiotherapists are crucial to the delivery of exercise training programs, and it is likely that the effects of pulmonary rehabilitation extend to other important outcomes, such as hospital admission and re-admission. On the basis of the evidence provided by these Cochrane reviews, this overview highlights important practice points of relevance to physiotherapy, and recommendations for future studies.

Mancini DM, et al (2008): conducted a study to investigate whether selective respiratory muscle training (incentive spirometry or the breathing exercise) could alleviate dyspnea and improve exercise performance. Selective respiratory muscle training improves respiratory muscle endurance and strength, with an enhancement of sub maximal and maximal exercise capacity in patients with heart failure. Dyspnea during activities of daily living was subjectively improved in the majority of trained patients.

Luciano Gabbrielli (2009) said that surgery and general anesthesia have effects directly on the respiratory system a leading cause for postoperative pulmonary complications that prolongs hospital stay and increases hospital morbidity. Most of the complications are due to dysfunction in the respiratory muscles and surgery related changes in the chest wall. Medical therapy combined with breathing exercises may improve clinical outcomes in abdominal and thoracic surgeries.

Gerald W. Smetana (2009) concluded that pulmonary complications are common, serious, and expensive in the postoperative period. Important risk factors are age, and poor health. Pulmonary complications are expensive and prolong hospital stay. He also stated that the only strategy was post-operative lung expansion modalities, which includes incentive spirometry, deep breathing exercises, intermittent positive pressure breathing, and continuous positive airway pressure.

Keith Tennnent (2009) said that there is a more serious danger associated with post- surgical recovery. The patient will probably be lying on his back for several days or weeks and the lungs will not be able to expand properly. Post-operative pneumonia may occur if he does not do breathing exercise to keep the lungs working. Furthermore, proper breathing exercise can help to keep the immune system functioning well.

Paulo (2009) evaluated the effectiveness of breathing exercise during the immediate postoperative period among patients who had elective abdominal surgery. 62 patients were divided into two groups and 31 were randomly assigned to control group and 31 to experimental group. The researcher concluded that breathing exercise in the post-operative period after abdominal surgery was effective in improving oxygen saturation without inducing abdominal pain.

P.J.Canet and V. Mazo (2010) stated that post-operative pulmonary complications accounts for a chance of risks related to surgery and anesthesia. Post-operative pulmonary complications are the major source of post-operative morbidity, mortality and lengthy hospitalization. They also suggest that risk factors for post-operative pulmonary complications are related to the patient's previous health status, use of particular anesthetic drugs and the surgical procedures. Age, associated morbidity, pre-existing respiratory and cardiac

diseases, duration of surgery and the use of general are also the significant risk factors for post-operative pulmonary complications.

IIse M. Espina, Jonathan Morgado and Joseph Varon (2011) stated post-operative pulmonary complications are one of the major problems in the post-operative period. Post-operative pulmonary complications account for increased morbidity and mortality, prolonged hospitalizations, and increased economical and medical resource utilization. The National Surgical Quality Improvement Program study found that the post-operative pulmonary complications were the most costly of the major postoperative medical complications. The incidence of post-operative pulmonary complications depends on a variety of risk factors, including pre-operative pulmonary conditions, and the type of surgery performed. The most commonly reported post-operative pulmonary complications include atelectasis, infections (i.e., pneumonia, and bronchitis), bronchospasm, pulmonary embolism, and exacerbation of underlying chronic lung disease and respiratory failure with necessity of assisted mechanical ventilation. These post-operative pulmonary complications are not only important require simple therapeutic interventions such as incentive spirometry, deep breathing exercise and early ambulation when possible, which dramatically decreases the number and frequency of post-operative pulmonary complications.

2.2. Conceptual frame work:

Conceptual frame work based on Imogene King's Open System Model (1981)

The main concepts of open system model are Input, Throughput, Output and Feedback

In the open system **Input or Action** refers to the matter, energy and information that enter into the system through its boundary.

In this study **Input** is the blowing tarty whistle as a breathing exercise intervention after the pre-test assessment of respiratory status for the children who underwent abdominal surgeries.

Through put or Reaction refers to the processing where the system transforms the energy matter.

In this study **through put** is the process taking place within the subjects during the exercise program.

Output or Transaction refers to the matter, energy and information in the environment that are in an altered state.

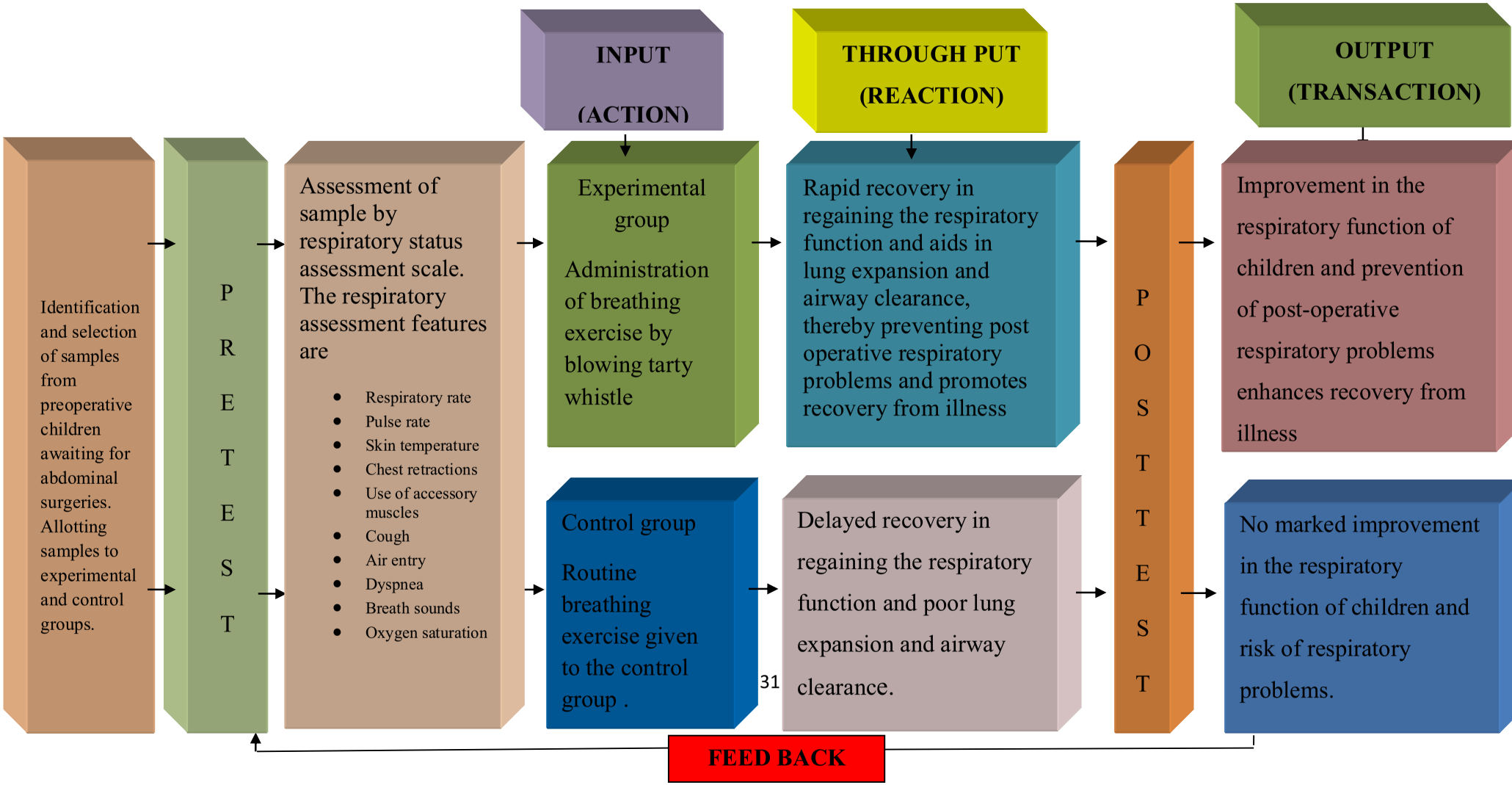
In this study **Output** is the improvement of respiratory status and the prevention of post-operative respiratory problems.

Feedback refers to the environmental response to the system.

The **feedbacks** used by the system are adjustment, correction, accommodation and the interaction with in the environment.

Figure-2.1 Conceptual frame work

Modified Imogene Kings Open System Model (1981



CHAPTER –III

METHODOLOGY

Research methodology is a pathway to solve the research problems systematically. It involves the series of procedures in which investigators starts from initial identification of the problem to its final conclusion. This chapter deals with description of methodology and different steps.

3.1. Research approach:

It is a quantitative study in which quasi-experimental approach was used. The study aimed to evaluate the effectiveness of breathing exercise in improving the post-operative respiratory status and prevention of post-operative respiratory problems. Randomization in sample selection was impossible since it was impossible to list out all surgical patients.

3.2. Duration of the study:

The study was conducted for the period of 4 weeks from 16.07.15 to 17.08.15.

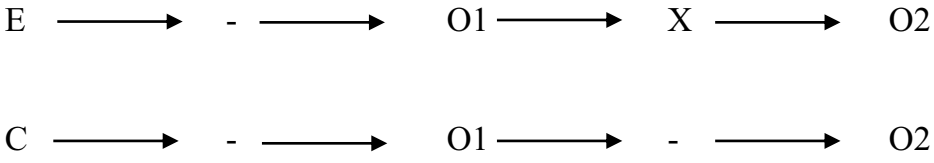
3.3. Setting of the study:

The study was conducted at the Institute of Child health and Hospital for children, Chennai. This hospital was started in the year 1968. It is a multispecialty hospital having 837 beds situated in the heart of city. There are about 27 departments and 7 medical units. The Institute has been rendering meritorious service and has been providing an avenue for the research. In the above clinic children come from different culture, religion, language and socio-

economic background. In this setting there is a separate unit where children get admitted with surgical conditions. During the year 2014, there were 36712 admissions in surgical unit among which 7177 Major and 9855 Minor surgeries were performed.

3.4. Study design:

Research design used for this study was Nonequivalent control group before-after design.



E = Experimental group

C = Control group

O_1 = Observation of respiratory status (pre-test) on first post-operative day which includes respiratory rate, pulse rate, skin temperature, chest retractions, use of accessory muscles, cough, air entry, dyspnea, breath sounds and oxygen saturation.

O_2 = Observation of respiratory status (post-test) on sixth post-operative day.

X = Breathing exercise by means of blowing tarty whistle.(manipulation)

- = No manipulation

3.5. Study population:

The population of this study comprises of children of both sexes underwent abdominal surgery, age group between 6-12 years.

3.6. Sample size:

A sample of 60 children age group of 6-12 years underwent abdominal surgery in selected post-operative ward. Among 60 children at post-operative ward, 30 for experimental group and 30 for control group.

3.7. Sampling criterion:

The researcher specified certain inclusion and exclusion characteristics for the population to be considered as a sample. Accordingly the population was studied and those that come under inclusion were selected as the sample and the other elements were excluded from the study.

3.7.1. Inclusion criteria:

1. Children who had undergone abdominal surgery under general anesthesia exclusive of thoracic, open- heart, spinal and cranial surgery at Institute of child health and hospital for children, Chennai-08.
2. Children aged between 6-12 years irrespective of their sex are included.
3. Children who stays for the period of 1 week after the surgery.

3.7.2. Exclusion criteria:

1. Children, not conscious and oriented.
2. Children who are not permitted to participate by their parents to participate in the study.
3. Children with previous history of asthma or any respiratory disorders.

4. Children, on ventilator support.
5. Children, undergone open- heart, thoracic, cranial and spinal surgeries.

3.8. Sampling technique:

Samples for the study were selected through purposive sampling technique. Randomization in sample selection was not possible since it was impossible to list out all surgical patients

3.9 . Research variables:

Independent variable : Blowing tarty whistle

Dependent variable **:** Respiratory problems

3.10. Development and Description of tools:

3.10.1. Development of tools:

The researcher developed the tool on the basis of objective of the study. Tool was developed after extensive review of literature from various text book, journals, internet search and discussion and guidance from the experts in the field of nursing, Department of child health and personal experience of the researcher in the clinical field. The tool was developed in English and translated into Tamil. Congruency was maintained in translation.

3.10.2. Description of tools:

Section I: Demographic variables of the samples consists of Structured questionnaire which includes age, sex, primary care giver, educational status of the care giver, monthly income of the family, area of living, type of surgery, weight for age and previous health history.

Section II: Respiratory status assessment scale consists of ten features explaining to be checked scoring 0, 1 and 2. A score of 0 was allotted for each normal finding and 1 and 2 for each abnormal finding.

Section III: Observational checklist consists of ten items of respiratory status assessment scale for assessing the respiratory status. A score of 0 was allotted for each normal feature and 1 and 2 for each abnormal feature.

Scoring procedure:

Observational checklist consists of ten items of respiratory status assessment scale for assessing the respiratory status. A score of 0 was allotted for each normal feature and 1 and 2 for each abnormal feature.

Total score of 0 _ No respiratory problem

Total score of 1-6 – Mild respiratory problem

Total score of 7-13 – Moderate respiratory problem

Total score of 14-20 – Severe respiratory problem

Low score indicates improvement of respiratory status and higher score indicates respiratory deterioration.

3.10.3. Content validity:

Validity of the tool was assessed using content validity. Content validity was determined by experts from Nursing Medical and Statistician. They suggested certain modifications in tool. After suggested certain modifications they agreed this tool for assess the effectiveness of blowing tarty whistle on prevention of post-operative respiratory problems among children age group of 6-12 years who underwent abdominal surgery in selected post-operative ward at Institute of Child health and Hospital for children, Chennai.

3.11. Ethical consideration:

The study objectives, interventions and data collection procedure were approved by Ethics Committee of Madras Medical College, Chennai.

3.12. Pilot study:

A pilot study was conducted among 6 subjects in the same manner of the original study at Institute of Child health and Hospital for children, Chennai -08. Data was analyzed to find out suitability of statistics. The samples on which the pilot study was conducted where excluded from the main study.

3.13. Reliability:

The reliability of measuring instrument was a major criterion for assessing the accuracy try test re test method. The reliability established by using Cronbach's Alpha method because it is multi variable item score $\propto$ = 0.81.

3.14. Data collection procedure:

The study was conducted in selected post-operative ward after obtaining permission from the Director of ICH. In the previous day of surgery samples were selected from pediatric pre-operative ward. Samples were assigned for control and experimental groups without the knowledge of the study participants and the mothers/ care giver. Consent was obtained from the mothers /care givers of the study participants and demographic data were collected. Mothers / care givers and children were demonstrated the method of blowing tarty whistle as a breathing exercise and re-demonstration was obtained on the previous day of surgery.

In the first post-operative day after twenty four of hour's surgery, pre-test was done for both control and experimental groups before starting the blowing tarty whistle as a breathing exercise. Breathing exercise in the form of blowing tarty whistle was started for experimental group in the first post-operative day after pre-test. The blowing tarty whistle as a breathing exercise was given along with routine treatment to each child for 10 minutes in each session at four times a day for five consecutive days by the investigator to the experimental group and only routine treatment was given to the control group. On the sixth post-operative day post-test was done for both groups and the results were compared with the respiratory assessment scale.

The data collection period was 4 weeks (16.07.15 to 17.08.15). Data was collected in all 7 days of the week.

Intervention protocol:

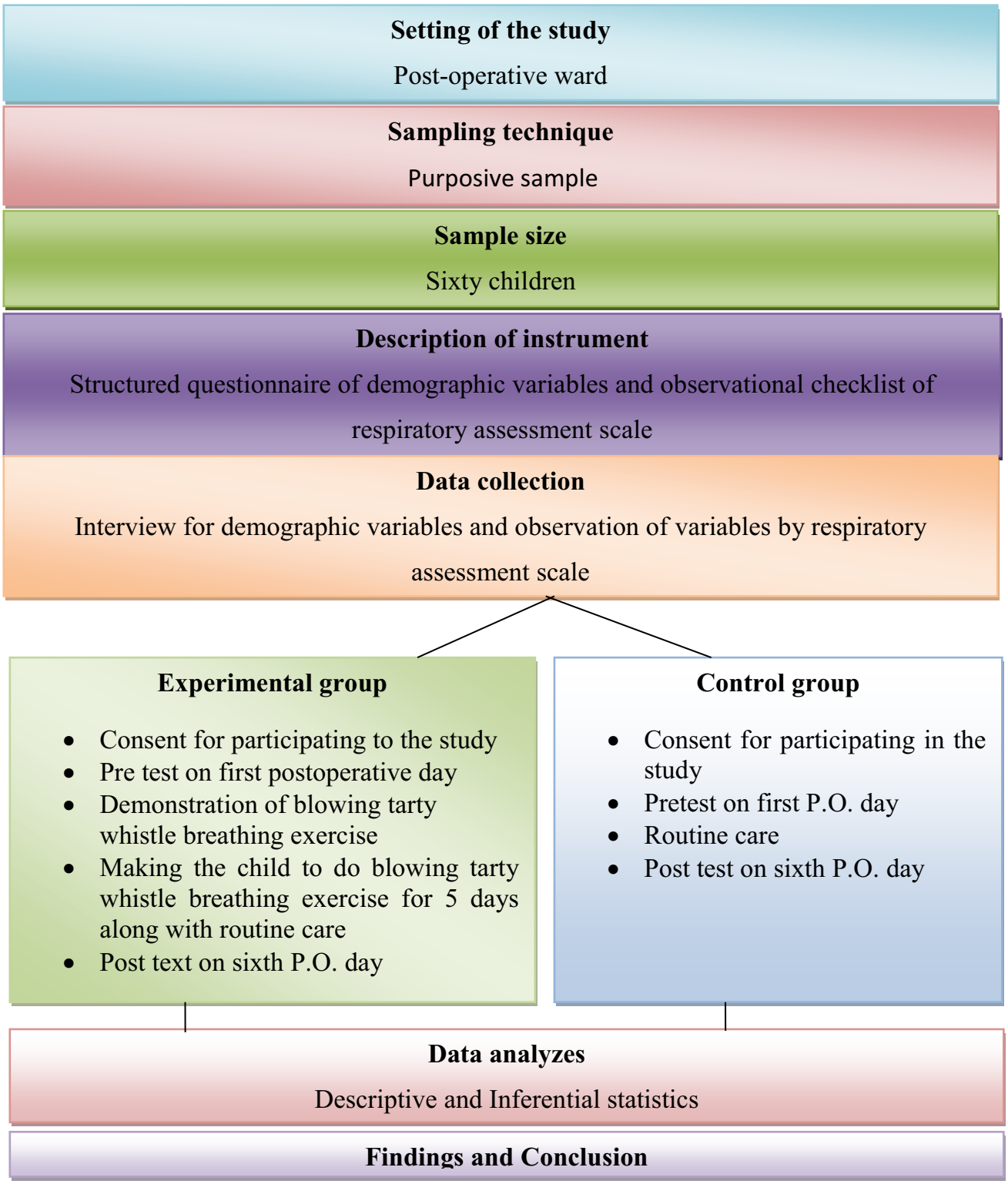
	Experiment group	**Control group**
Place	Post-operative ward	Post-operative ward
Interventional tool	Blowing tarty whistle	Routine breathing exercises
Duration	5 days	5 days
Frequency	four times a day	four times a day
Time	8 am, 12 noon, 4 pm and 8 pm	8 am, 12 noon,4 pm and 8 pm
Administered by	Investigator	Investigator

3.15. Data entry and analysis:

The obtained data was analyzed by using both descriptive and inferential statistics.

- Organize the data.
- Frequency and percentage distribution of the demographic variables.
- Pre and post-test respiratory status in both the groups were analyzed by using proportion test.
- Comparison of pre and post-test respiratory status in both the groups were analyzed by using Chi-Square test.
- Comparison of mean pre and post- test respiratory status score within groups were analyzed by using paired' test.
- Comparison of mean pre and post- test respiratory status score between groups were analyzed by using unpaired't' test.
- Effectiveness of breathing exercise on the level of pre and post-test respiratory problem was analyzed by using Pearson Chi-Square test.P value @ 0.001 significance.

Figure 3.16: Schematic representation of the research plan



CHAPTER –IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of the data collected. Analysis is a method for rendering quantitative, meaningful and providing intelligible information. So that the research problem can be studied and tested including the relationship between the variables.

The data collected have been analyzed using appropriate statistical methods and the results are presented below.

Organization of the data:

Section I : Demographic profile of the sample.

Section II : Assessment of pre-test respiratory status of the children among experimental and control groups

Section III : Assessment of post-test respiratory status of the children among experimental and control groups.

Section IV : Comparison of Mean of the pre-test and post-test of respiratory status in experimental and control groups.

Section V : Evaluating the effectiveness of breathing exercise on the level of respiratory problem experimental group.

Section VI : Association of post-test respiratory status with the Demographic variables in experimental and control groups.

Section I: Distribution of Demographic variables in children

Table 4.1: Frequency and distribution of children according to Demographic variables

Demographic variables		Group			
		Experiment		Control	
		Frequency	in %	frequency	in %
Age Group	6 – 8 yrs	9	30.0	13	43.3
	8 – 10 yrs	9	30.0	8	26.7
	10 – 12 yrs	12	40.0	9	30.0
Gender	Male	18	60.0	16	53.3
	Female	12	40.0	14	46.7
Primary care giver	Mother	27	90.0	28	93.3
	Grand mother	3	10.0	2	6.7
Educational status of the Primary care giver	Primary education	12	40.0	15	50.0
	High School	8	26.7	9	30.0
	HSC	6	20.0	2	6.7
	Collegiate educational	2	6.7	2	6.7
	No formal education	2	6.7	2	6.7
Monthly income of the family	<Rs 2000	3	10.0	2	6.7
	Rs. 2000 – 4000	17	56.7	16	53.3
	Rs. 4000 – 6000	9	30.0	8	26.7
	>Rs. 6000	1	3.3	4	13.3
Area of living	Rural	15	50.0	18	60.0
	Urban	12	40.0	8	26.7
	Semi urban	3	10.0	4	13.3
Type of surgery	Appendicectomy	10	33.3	8	26.7
	Pyloromyotomy	1	3.3	0	0.0
	Laparotomy	6	20.0	12	40.0
	Pyeloplasty	2	6.7	0	0.0
	Other Abdominal surgeries	11	36.7	10	33.3
Weight for age	Appropriate weight	20	66.7	16	53.3
	Under weight	10	33.3	14	46.7
Previous health history	Good health	16	53.3	15	50.0
	Repeated illness	14	46.7	15	50.0

Table 4.1 shows the demographic information of children those who were participated in the study.

In considering the **age** wise distribution of children, 40% of children were in 10-12 years of age, 6-8 & 8-10 years of age grouped children were 30% in the experimental group.30% of children were in 10-12 years of age, 26.7% of children were in 8-10 years of age, 43.3% of children were in 6-8 years of age in the control group.

In the **sex** wise distribution, 60% of children were male children and 40% were female children in experimental group. In the control group 53.3% of male children and 46.7% of female children were participated in the study.

In considering the **primary care giver** of the study participants, 90% of children were cared by the mothers and 10% of children were cared by the grand mothers in the experimental group. In the control group, 93.3% of children were cared by the mothers and 6.7% were the grand mothers were participated in the study.

In the experiment group 40%(12) primary care givers had primary **education**, 26.7%(8) had high school education, 20% (6) had higher secondary education, 6.7% (2) had collegiate, and only 6.7%(2) primary care givers were no formal education.

In the control group 50% (15) primary care givers had primary education, 30% (9) had high school education, 6.7% (2) had higher secondary education, 6.7% (2) had collegiate education, and 6.7% (2) primary care givers were no formal education.

In the **monthly income** status of the children's family who are participated in the study, 56.7% of children's family income was Rs. 2000-4000 and 30% of children's family income was Rs.4000-6000 and 10% of children's family income was <Rs.2000 and 3.3% of children's family income was >Rs.6000 in experimental group.

In the control group, 53.3% of children's family income was Rs. 2000-4000 and 26.7% of children's family income was Rs.4000-6000 and 13.3% of children's family income was >Rs.6000 and 6.7% of children's family income was <Rs.2000 in experimental group.

50% of children in experimental group and 60% in control group were from rural **area**. 40% of children in experimental group and 26.7% in control group were from urban area. 10% of children in experimental group and 13.3% in control group were from semi-urban area.

In considering the **type of surgery** that the children had undergone during the study, 33.3% of children had undergone appendicectomy, 3.3% pyloromyotomy, 20% laparotomy, 6.7% pyeloplasty and 36.7% of children had undergone other abdominal surgeries in experimental group.

In control group 26.7% of children had undergone appendicectomy, 40% laparotomy and 33.3% of children had undergone other abdominal surgeries.

In the study participants 66.7% of children were appropriate **weight** for age and 33.3% were under weight in experimental group.

In control group 53.3% of children were appropriate weight and 46.7% were under weight.

In the **previous health status** of the children who were participated in the study, 53.3% of children were in good health and 46.7% had repeated illness both in experimental group.

In control group 50% of children were good health and 50% were in repeated illness.

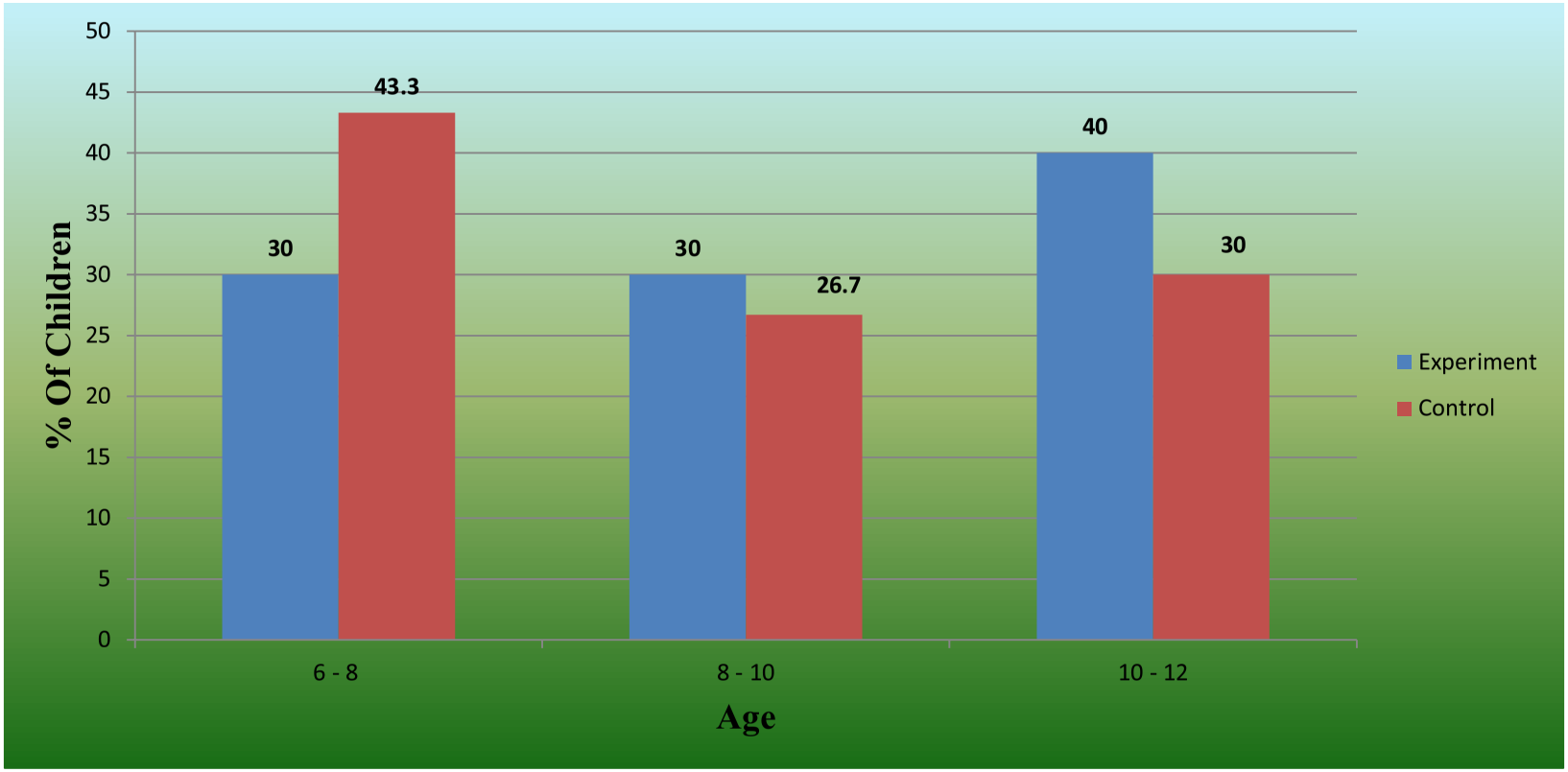


Figure 4.1: Age wise distributions of children

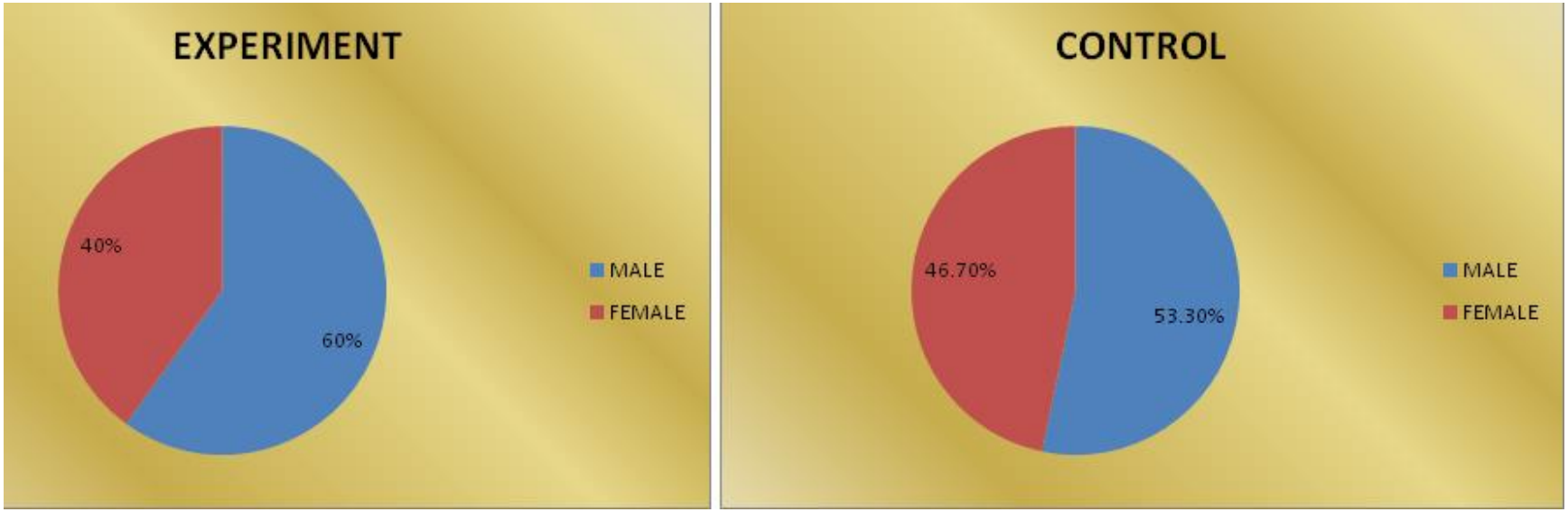


Figure 4.2: Gender wise distributions of children

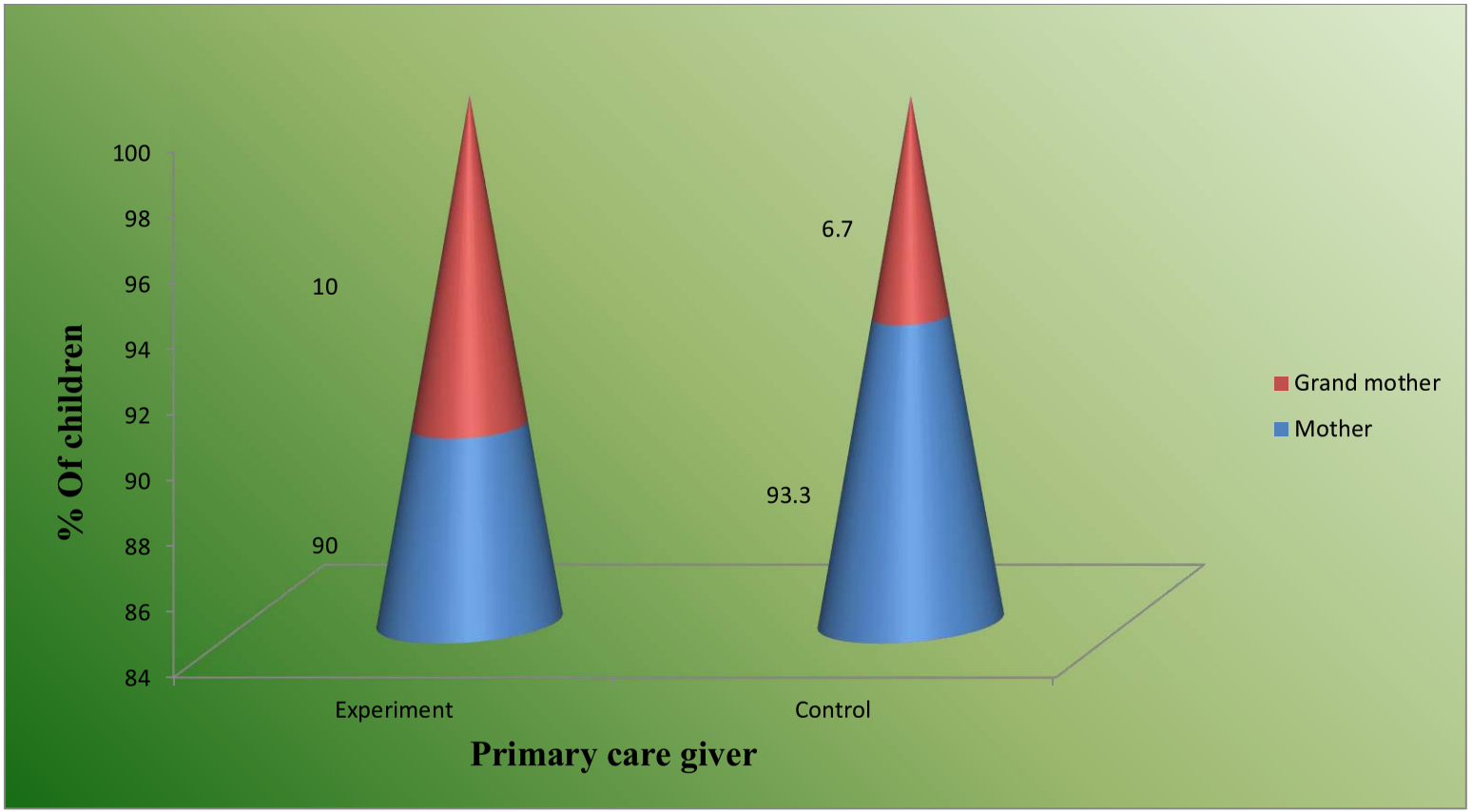


Figure 4.3: Primary care giver wise distributions of children

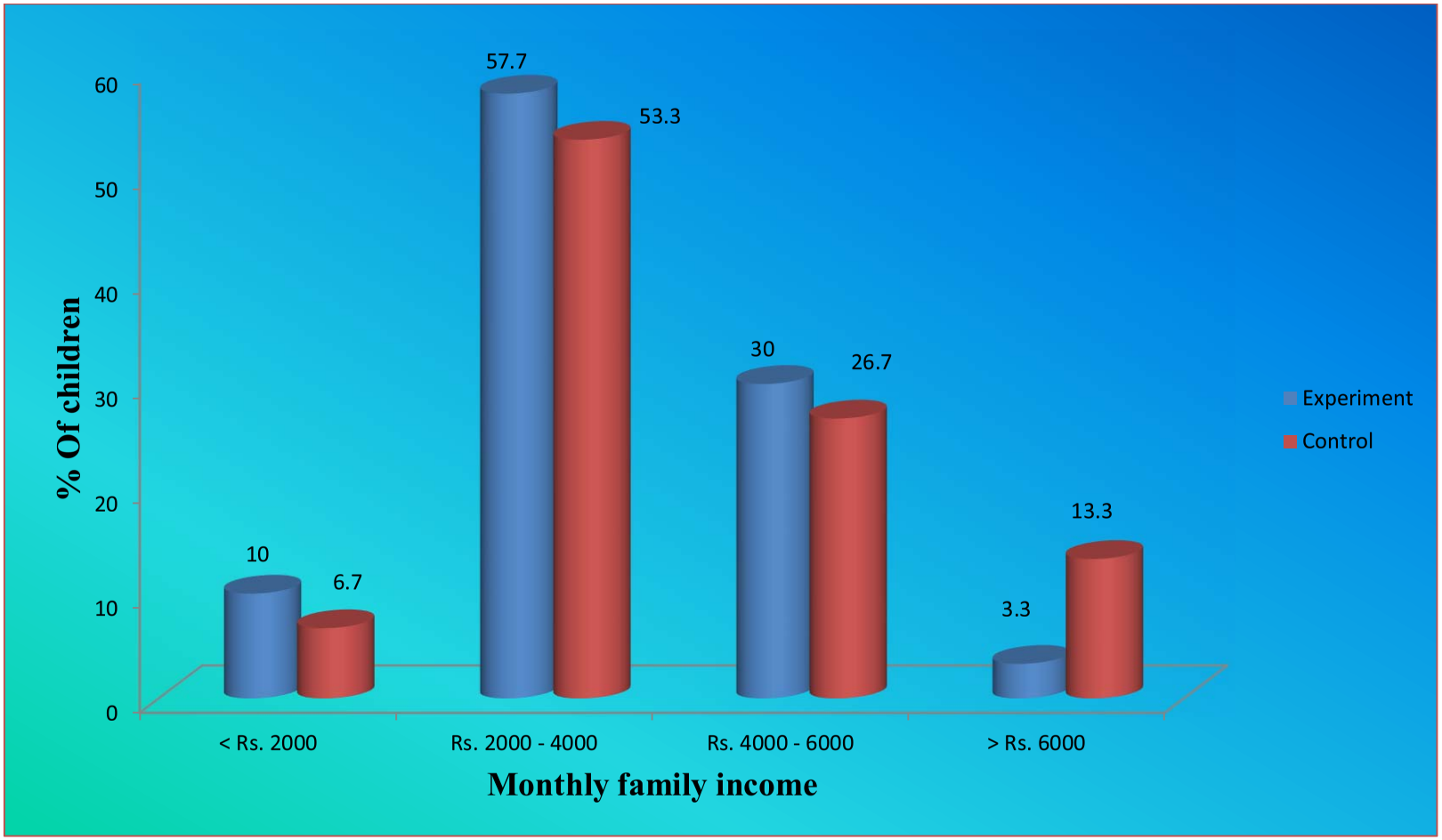


Figure 4.4 Monthly family income wise distributions of children

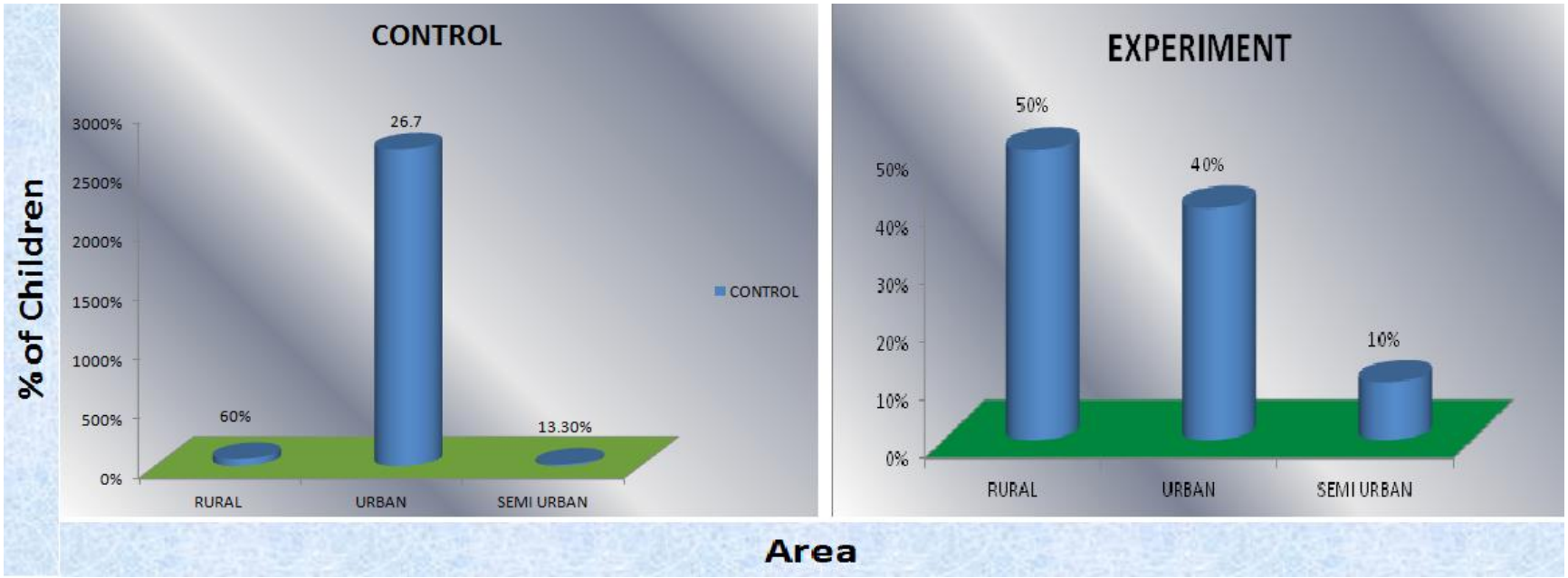


Figure: 4.5 Area wise distributions of children

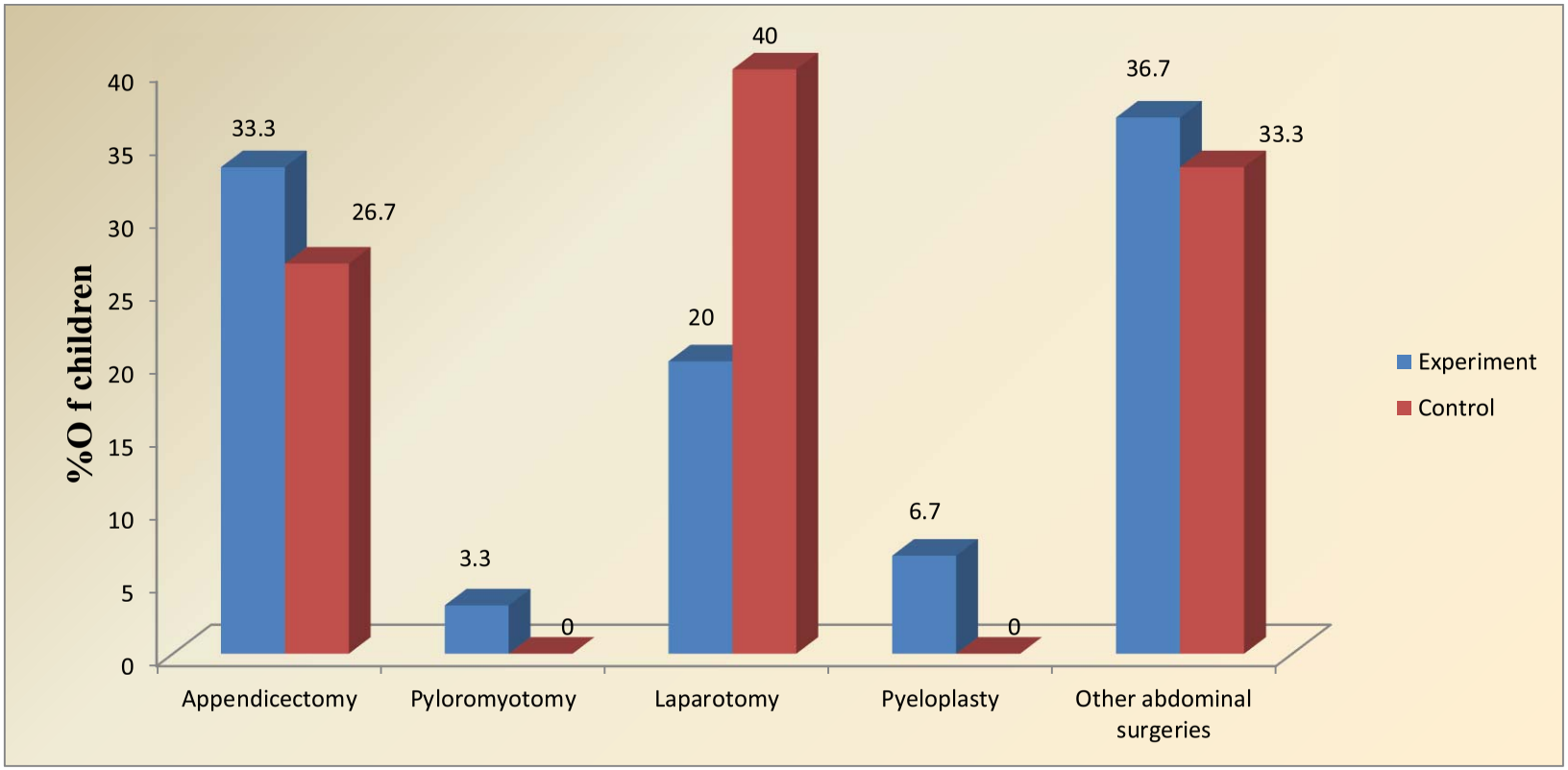


Figure 4.6: Type of surgery wise distributions of children

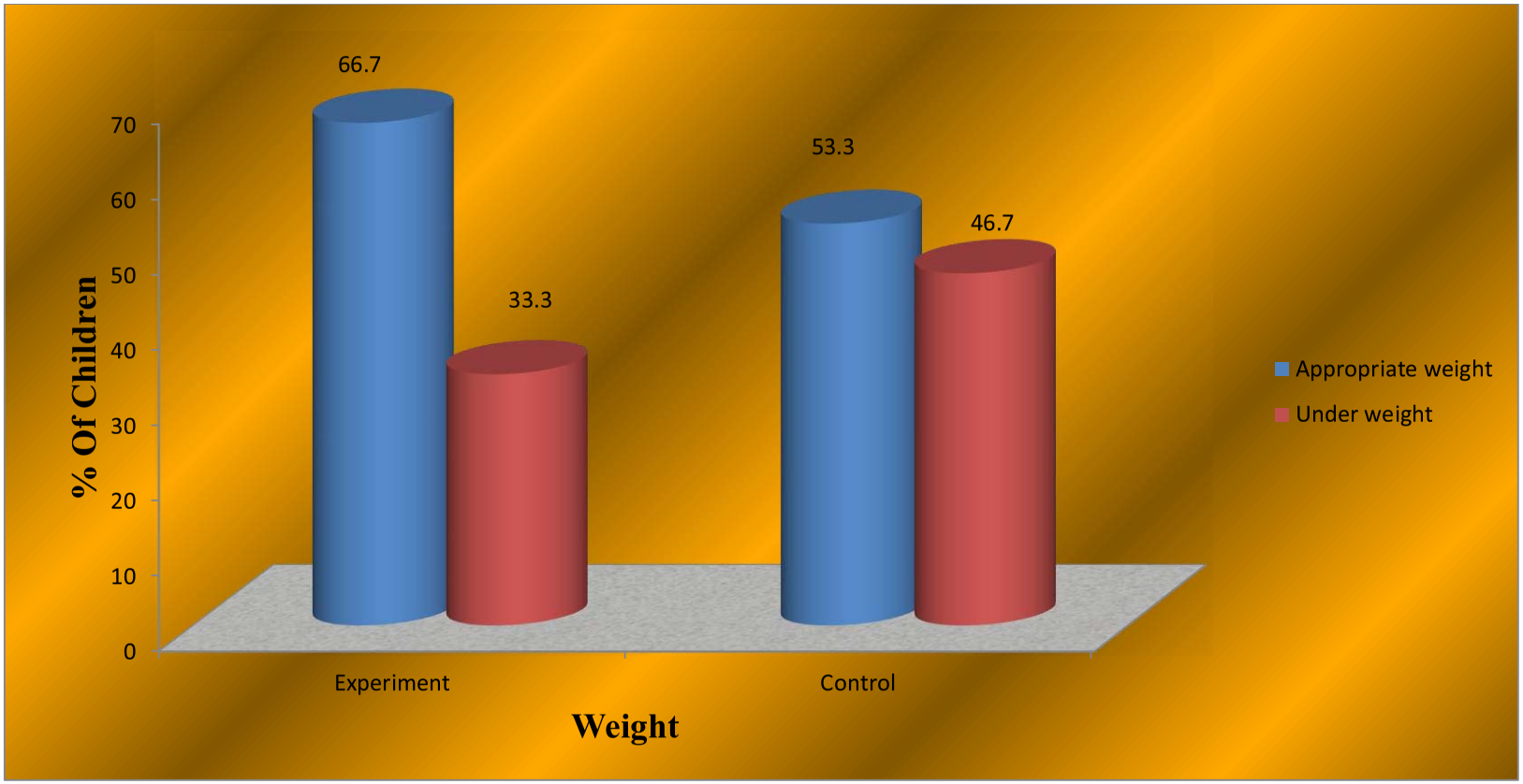


Figure 4.7: Weight wise distributions of children

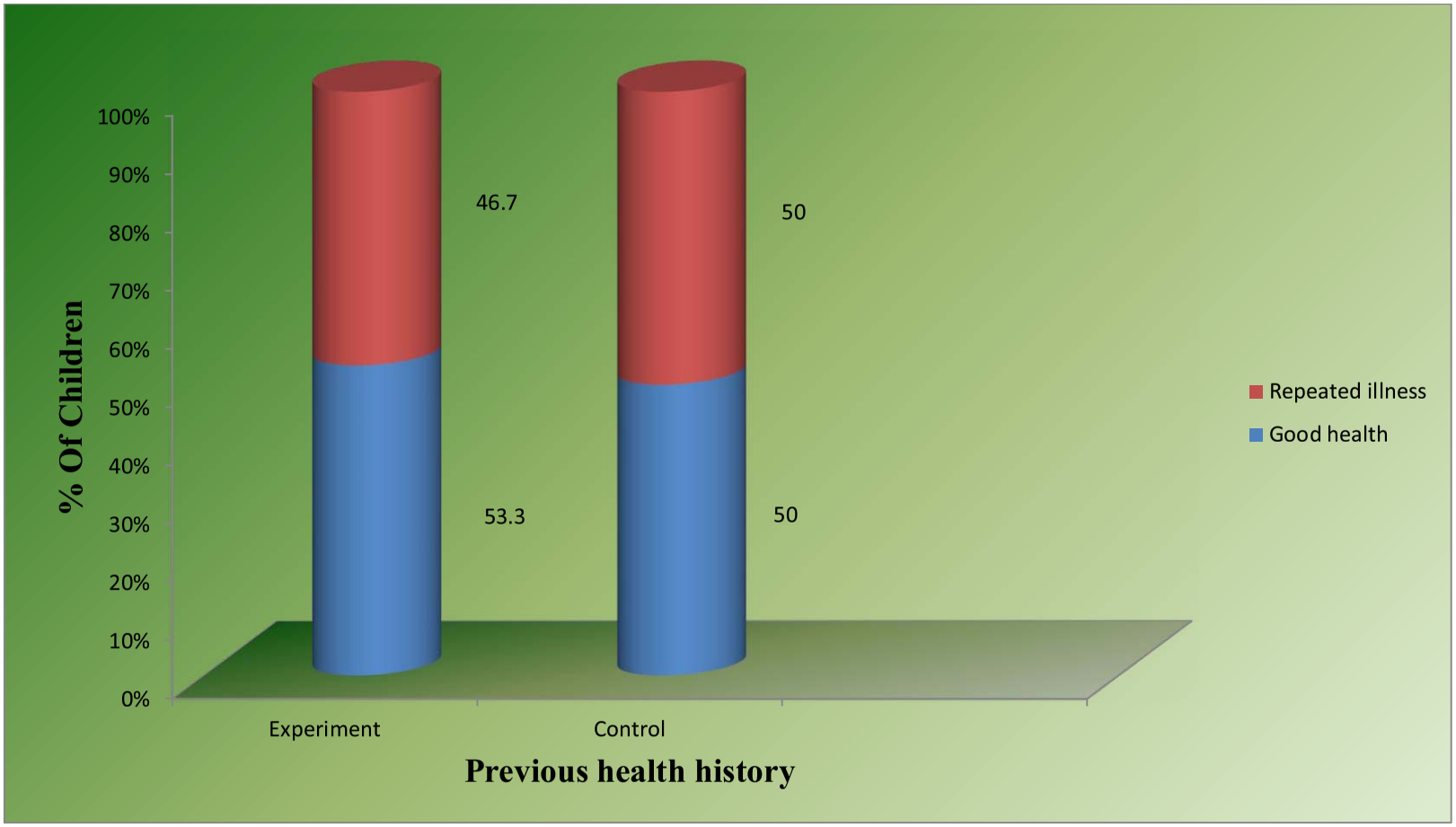


Figure 4.8: Previous health history wise distributions of children

Section II: Assessment of pre-test respiratory status of children in experimental group and control group

Table 4.2: Frequency and percentage of pre-test respiratory status of children among experimental and control groups

Features of respiratory assessment scale		Group				Proportion test
		Experiment (n=30)		Control (n=30)		
		frequency	in %	frequency	in %	
Respiratory rate	Score -0	10	33.3	8	26.7	Z=0.54 P=0.58
	Score-1	20	66.7	22	73.3	
Pulse rate	Score-0	3	10.0	6	20.0	Z=0.77 P=0.74
	Score-1	22	73.3	18	60.0	
	Score-2	5	16.7	6	20.0	
Skin temperature	Score-0	3	10.0	1	3.3	Z=0.86 P=0.38
	Score-1	27	90.0	29	96.7	
Chest retractions	Score-0	28	93.3	30	100.0	Z=1.51 P=0.21
	Score-1	2	6.7	0	0.0	
Use of accessory muscle	Score-0	20	66.7	22	73.3	Z=0.52 P=0.59
	Score-1	10	33.3	8	26.7	
Cough	Score-1	10	33.3	5	16.7	Z=0.27 P=0.60
	Score-2	20	66.7	25	83.3	
Air entry	Score-0	30	100.0	30	100.0	Z=0.00 P=1.00
Dyspnea	Score-0	22	73.3	12	40.0	Z=1.56 P=0.12
	Score-1	8	26.7	18	60.0	
Breath sounds	Score-0	2	6.7	1	3.3	Z=1.38 P=0.38
	Score-1	20	66.7	17	56.7	
	Score-2	8	26.7	12	40.0	
Oxygen saturation	Score-0	5	16.7	8	26.7	Z=0.93 P=0.35
	Score-1	25	83.3	22	73.3	

*Significant at $P \leq 0.05$

Table 4.2 represents the frequency and percentage of pre-test respiratory status assessment score of the children who underwent abdominal surgeries.

It was evident that 20(66.7%) children had moderately increased **respiratory rate** and 10(33.3%) had normal respiratory rate in experimental group. In control group 22(73.3%) children had moderately increased respiratory rate and 8(26.7%) had normal respiratory rate.

In **pulse rate**, 5(16.7%) children had high pulse rate, 22(73.3%) children had moderately increased pulse rate and 3(10.0%) had normal pulse rate in experimental group. In control group 6(20.0%) children had high pulse rate, 18(60.0%) children had moderately increased pulse rate and 6(20.0%) had normal pulse rate.

In the **skin temperature**, 27(90%) children had increased temperature and 3(10%) children had normal skin temperature in the experimental group. In control group, 29(96.7%) children had increased temperature and 1(3.3%) had normal skin temperature. Only two children in the experimental group had mild **chest retractions**. In the experimental group 10(33.3%) children used accessory muscles mildly and in the control group 8(26.7%) children used accessory muscles mildly.

In the experimental group 20(66.7%) had productive **cough** and 10(33.3%) had non productive cough. In the control group 25(83.3%) had productive cough and 5(16.7%) had non productive cough. All children had good **air entry** in the lungs both in experimental and control group. In experimental group 8(26.7%) had mild dyspnea and in the control group 18(60%) had mild dyspnea.

In the experimental group 8(26.7%) had severe **auscultatory crepitations** and 20(66.7%) had occasional rales in the lung fields. In the control group 12(40%) had severe auscultatory crepitations and 17(56.7%) had occasional rales in the lung fields.

In the experimental group 25(83.3%) had moderately low **oxygen saturation** and in control group 22(73.3%) had moderately low oxygen saturation.

In the above table, the observation check list shows that there was no statistically significance difference between experiment and control group children in the pre test respiratory status. Statistical significance was calculated using proportion test.

Section III: Assessment of post-test respiratory status of children in experimental and control group

Table 4.3: Frequency and percentage of post-test respiratory status

Features of respiratory assessment scale		Group				Proportion test
		Experiment (n=30)		Control (n=30)		
		frequency	in %	Frequency	in %	
Respiratory rate	Score -0	30	100.0	30	100.0	Z=0.00
	Score-1	0	0.0	0	0.0	P=1.00
Pulse rate	Score-0	30	100.0	25	83.3	**Z=2.86**
	Score-1	0	0.0	5	16.7	**P=0.01****
Skin temperature	Score-0	30	100.0	17	56.7	**Z=4.58**
	Score-1	0	0.0	13	43.3	**P=0.01****
Chest retractions	Score-0	30	100.0	30	100.0	Z=0.00
	Score-1	0	0.0	0	0.0	P=1.00
Use of accessory muscle	Score-0	30	100.0	30	100.0	Z=0.00
	Score-1	0	0.0	0	0.0	P=1.00
Cough	Score-0	22	73.3	5	16.7	**Z=17.37**
	Score-1	8	26.7	25	83.3	**p=0.001*****
Air entry	Score-0	30	100.0	30	100.0	Z=0.00
	Score-1	0	0.0	0	0.0	p=1.00
Dyspnea	Score-0	30	100.0	25	83.3	**Z=2.86**
	Score-1	0	0.0	5	16.7	**p=0.01****
Breath sounds	Score-0	26	86.7	6	20.0	**Z=3.10**
	Score-1	4	13.3	24	80.0	**p=0.01****
Oxygen saturation	Score-0	30	100.0	30	100.0	Z=0.00
	Score-1	0	0.0	0	0.0	p=1.00

*Significant at $P \leq 0.05$

** Highly significant at $P \leq 0.01$

*** Very significant at $P \leq 0.001$

Table 4.3 represents the frequency and percentage of post-test respiratory status assessment score of the children who underwent abdominal surgeries.

It shows that all the 30 children had normal **respiratory rate** in both control group and experimental groups. In the **pulse rate**, 30(100.0%) children had normal in experimental group. In control group 5(16.7%) had moderately increased normal pulse rate and 25(83.3%) had normal pulse rate.

In the **skin temperature**, 30(100.0%) children had normal in experimental group. In control group 13(43.3%) had increased temperature and 17(56.7%) had normal skin temperature. In **chest retraction** all the 30 children were in no chest retraction for both experimental and control group. All the children in experimental and control group were not used their accessory muscles.

In the experimental group 8(26.7%) had non productive **cough** and 22(73.3%) had no cough. In control group 25(83.3%) had non productive cough and 5(16.7%) had no cough. All the 30 children had good **air entry** in the lungs both in experimental and control group.

In the experimental group no children had **dyspnea**. In the control group 5(16.7%) had mild dyspnea and 25(83.3%) had no dyspnea. In the experimental group 4(13.3%) had occasional rales in the lung fields and 26(86.7%) had normal **breath sounds.** In control group 24(80%) had occasional rales in the lung fields and 6(20%) had normal breath sounds. In the experimental and control group all the 30 children were in normal **oxygen saturation.**

Observation check list shows that there was statistically significant difference between experiment and control group children's respiratory status. Pulse rate, skin temperature, cough, dyspnea, breath sound scores were low in experimental group rather than control group. Statistical significance was calculated using proportion test.

Section IV: Comparison of mean pre and post-test level of respiratory status in experimental group and control group

Table 4.4: Comparison of pre and post-test respiratory status among experimental group

Features of respiratory assessment scale		Experiment group				Chi-square test
		Pre-test		Post-test		
		Frequency	in %	frequency	in %	
Respiratory rate	Score -0	10	33.3	30	100.0	**χ2=37.34 p=0.001*** **
	Score-1	20	66.7	0	0.0	
Pulse rate	Score-0	3	10.0	30	100.0	**χ2=49.09 p=0.001*** **
	Score-1	22	73.3	0	0.0	
	Score-2	5	16.7	0	0.0	
Skin temperature	Score-0	3	10.0	30	100.0	**χ2=58.82 p=0.001*** **
	Score-1	27	90	0	0.0	
Chest retractions	Score-0	28	93.3	30	100.0	χ2=1.51 p=0.21
	Score-1	2	6.7	0	0.0	
Use of accessory muscle	Score-0	20	66.7	30	100.0	**χ2=23.09 p=0.001*** **
	Score-1	10	33.3	0	0.0	
Cough	Score-0	0	0.0	22	73.3	**χ2=40.2 P=0.001*** **
	Score-1	10	33.3	8	26.7	
	Score-2	20	66.7	0	0.0	
Air entry	Score-0	30	100.0	30	100.0	χ2=0.00 p=1.00
Dyspnea	Score-0	22	73.3	30	100.0	**χ2=17.00 p=0.001*** **
	Score-1	8	26.7	0	0.0	
Breath sounds	Score-0	2	6.7	26	86.7	**χ2=37.45 p=0.001*** **
	Score-1	20	66.7	4	13.3	
	Score-2	8	26.7	0	0.0	
Oxygen saturation	Score-0	5	16.7	30	100.0	**χ2=43.10 p=0.001*** **
	Score-1	25	83.3	0	0.0	

*Significant at P ≤ 0.05

** Highly significant at P ≤ 0.01

*** Very significant at P ≤ 0.001

Table 4.4 represents the frequency and percentage of comparison in pre-test and post-test respiratory status scores in the experimental group.

It was evident that 20(66.7%) children had moderately increased **respiratory rate** and 10(33.3%) had normal respiratory rate in the pre-test. In the post-test all the 30(100%) children had normal respiratory rate. In **pulse rate**, 5(16.7%) children had high pulse rate, 22(73.3%) children had moderately increased pulse rate and 3(10.0%) had normal pulse rate in the pre-test. In the post-test all the 30(100.0%) children had normal pulse rate.

In the **skin temperature**, 27(90%) children had increased temperature and 3(10%) children had normal skin temperature in the pre-test. In the post-test all the 30(100%) children had normal skin temperature. Only two children in the pre-test had mild **chest retractions**. But no children had chest retractions in the post test.

In the pre-test 10(33.3%) children used **accessory muscles** mildly and 20(66.7%) had no accessory muscle involvement. In the post-test all the 30(100%) children had no accessory muscle involvement. In the pre-test 20(66.7%) had productive **cough** and 10(33.3%) had non productive cough. In the post-test 8(26.7%) had non productive cough and 22(73.3%) had no cough.

All children had good **air entry** in both lungs in pre-test and post-tests. In the pre-test 8(26.7%) had mild **dyspnea** and 22(73.3%) children had no dyspnea. In the post-test no children had dyspnea.

In the pre-test 8(26.7%) had severe auscultatory crepitations and 20(66.7%) had occasional rales in the lung fields and 2(6.7%) had normal **breath sounds**. In the post-test 4(13.3%) had occasional rales in the lung fields and 26(86.7%) had normal breath sounds. In the pre-test 25(83.3%) had moderately low **oxygen saturation** and 5(16.7%) children had normal oxygen saturation. In the post-test all the 30(100%) had normal oxygen saturation.

Observation check list shows that there was statistically significant difference between pre test and post test respiratory status scores. Respiratory rate, pulse rate, skin temperature, accessory muscle usage, cough, dyspnea, breath sound scores were low in the post test considering the pre test scores. Statistical significance was calculated using chi-square test.

Table 4.5: Comparison of pre and post-test respiratory status among control group

Features of respiratory assessment scale		control group				Chi-square test
		Pre-test		Post-test		
		Frequency	in %	frequency	in %	
Respiratory rate	Score -0	8	26.7	30	100.0	**$\chi 2 = 42.80$ P=0.001*** **
	Score-1	22	73.3	0	0.0	
Pulse rate	Score-0	6	20.0	25	83.3	**$\chi 2$=25.44 p=0.001*** **
	Score-1	18	60.0	5	16.7	
	Score-2	6	20.0	0	0.0	
Skin temperature	Score-0	1	3.3	17	56.7	**$\chi 2$=19.20 p=0.001*** **
	Score-1	29	96.7	13	43.3	
Chest retractions	Score-0	30	100.0	30	100.0	$\chi 2$=1.51 p=0.21
	Score-1	0	0.0	0	0.0	
Use of accessory muscle	Score-0	22	73.3	30	100.0	**$\chi 2$=23.09 p=0.001*** **
	Score-1	8	26.7	0	0.0	
Cough	Score-0	0	0.0	5	16.7	$\chi 2$=4.16 p=5.991
	Score-1	5	16.7	11	36.7	
	Score-2	25	83.3	14	46.7	
Air entry	Score-0	30	100.0	30	100.0	$\chi 2$=0.00 p=1.00
	Score-1	0	0.0	0	0.0	
Dyspnea	Score-0	12	40.0	25	83.3	**$\chi 2$=7.176 p=0.01** **
	Score-1	18	60.0	5	16.7	
Breath sounds	Score-0	1	3.3	6	20.0	**$\chi 2$=18.09 p=0.001*** **
	Score-1	17	56.7	24	80.0	
	Score-2	12	40.0	0	0.0	
Oxygen saturation	Score-0	8	26.7	30	100.0	$\chi 2$=0.93 p=0.35
	Score-1	22	73.3	0	0.0	

*Significant at $P \leq 0.05$

** Highly significant at $P \leq 0.01$

*** Very significant at $P \leq 0.001$

Table 4.5 represents the frequency and percentage in comparison of pre and post-test respiratory status in the control group.

It showed that 22(73.3%) children had moderately increased **respiratory rate** and 8(26.7%) had normal respiratory rate in the pre-test. In the post-test all the 30(100%) children had normal respiratory rate. In the pulse rate, 6(20.0%) children had high **pulse rate**, 18(60.0%) children had moderately increased pulse rate and 6(20.0%) had normal pulse rate in the pre- test. In the post-test 5(16.7%) had moderately increased normal pulse rate and 25(83.3%) had normal pulse rate.

In considering the **skin temperature**, 29(96.7%) children had increased temperature and 1(3.3%) had normal skin temperature in the pre-test. In the post-test 13(43.3%) had increased temperature and 17(56.7%) had normal skin temperature. No children had **chest retractions** in the pre-test and post-test. In the pre-test 8(26.7%) children used accessory muscles mildly and 22(73.3%) children had no accessory muscle involvement. In the post-test all the 30(100%) children had no accessory muscle involvement.

In the pre-test 25(83.3%) had productive **cough** and 5(16.7%) had non productive cough. In the post-test 14(46.7%) had productive cough, 11(36.7%) had non productive cough and 5(16.7%) had no cough. All children had good **air entry** in both lungs in pre-test and post-test. In the pre test 18(60%) had mild **dyspnea** and 12(40%) children had no dyspnea. In the post-test 5(16.7%) had mild dyspnea and 25(83.3%) had no dyspnea.

In the pre-test 12(40%) had severe auscultatory crepitations and 17(56.7%) had occasional rales in the lung fields and 1(3.3%) had normal **breath sounds**. In the post-test 24(80%) had occasional rales in the lung fields and 6(20%) had normal breath sounds. In the pre-test 22(73.3%) had moderately low oxygen saturation and 8(26.7%) children had normal **oxygen saturation**. In post-test all the 30(100.0%) had normal oxygen saturation.

Observation check list shows that there was statistically significant difference between pre test and post test respiratory status scores. Respiratory rate, pulse rate, skin temperature, accessory muscle usage, dyspnea, breath sound scores were low in the post test considering the pre test scores. Statistical significance was calculated using chi-square test.

Table 4.6: Comparison of mean pre-test and post-test respiratory status score within groups

Group	Pre-test		Post-test		Paired 't' test
	Mean	**SD**	**Mean**	**SD**	
Experiment	7.13	2.64	0.47	0.77	**t=10.74 p=0.001*** df=29**
Control	7.37	2.71	2.60	1.59	t=2.47 p=2.76 df=29

*Significant at p≤0.05

**Highly significant at p≤0.01

***Very high significant at p≤0.001

Table 4.6 shows comparison of mean pre-test and post-test respiratory status score within experiment and control groups.

The mean pre-test respiratory score was 7.13 and the post-test respiratory score was 0.47 in the experimental group. There was a significant difference between mean pre-test and post-test respiratory status (t=10.74 p=0.001).

The mean pre-test respiratory score was 7.37 and the post-test respiratory score was 2.60 in the control group. There was no significant difference between mean pre-test and post-test respiratory status (t=2.47 p=2.76).It was analyzed by using student's paired't' test.

Table 4.7: Comparison of mean pre-test and post-test respiratory status score between groups

Test	Experiment		Control		Unpaired t –test
	Mean	**SD**	**Mean**	**SD**	
Pre-test	7.13	2.64	7.37	2.71	t=0.33 p=0.73 df=58
Post-test	0.47	0.77	2.60	1.59	**t=6.61 p=0.001*** df=58**

*Significant at p≤0.05

**Highly significant at p≤0.01

***Very high significant at p≤0.001

Table 4.7 shows comparison of mean pre-test and post-test respiratory status scores between experiment group and control group.

The mean pre-test respiratory score was 7.13 in the experimental group and 7.37 in the control group. There was no statistical significance between pre-test respiratory status between experimental group and control group (t=0.33 p=0.73).

The mean post-test respiratory score was 0.47 in the experimental group and 2.60 in the control group. There was a statistical significance between mean post- test respiratory status between experimental group and control group (t=6.61 p=0.001).It was analyzed by using student's unpaired' test.

Section IV: Evaluating the effectiveness of breathing exercise on the level of respiratory problem in experimental group

Table 4.8: Level of pre-test respiratory problem

Level of respiratory problem	Experiment		Control		Pearson chi-square test
	Frequency	in %	frequency	in %	
No	0	0.0	0	0.0	$\chi 2$=0.08
Mild	0	0.0	0	0.0	P=3.841
Moderate	9	30.0	10	33.3	df=1
Severe	21	70.0	20	66.7	

*Significant at p≤0.05

**Highly significant at p≤0.01

***Very high significant at p≤0.001

Table 4.8 showed the children's pre-test level of respiratory problem.

In experimental group, 30.0% of children are having moderate respiratory problem and 70.0% are having severe respiratory problem. None of them are having no or mild respiratory problem.

In control group, 33.3% of the children are having moderate respiratory problem and 66.7% are having severe respiratory problem. None of them are having no or mild respiratory problem.

There was no statistically significant difference between experiment and control group in the pretest level of respiratory problem ($\chi 2$=0.08 p=3.841). Statistical significance was calculated by using Pearson chi-square test.

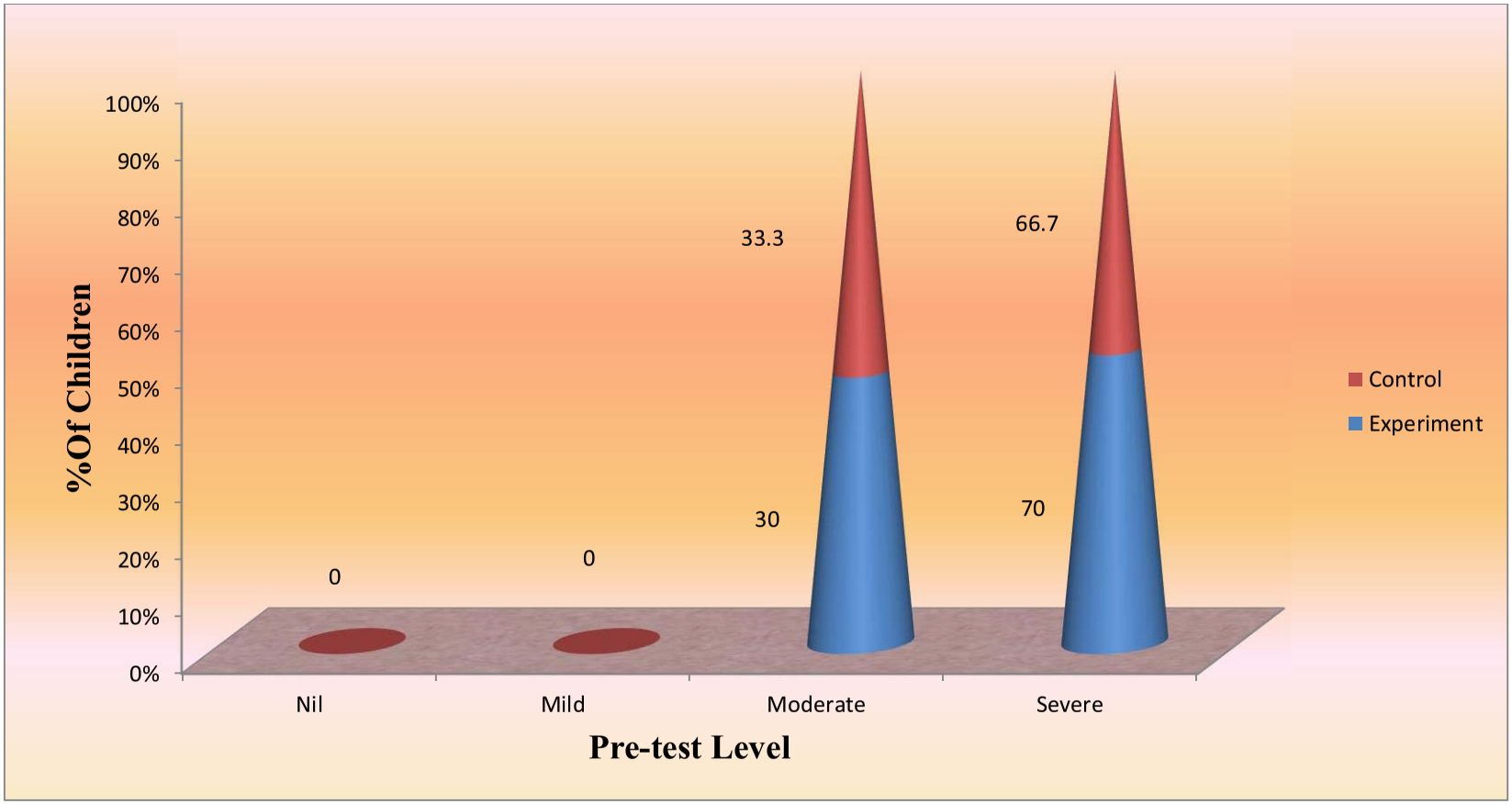


Figure 4.9: Level of pre-test respiratory problems

Table 4.9: Level of post-test respiratory problem

Level of respiratory problem	Experiment		Control		Pearson chi-square test
	frequency	in %	frequency	in %	
No	22	73.3	5	16.7	**χ2=19.46**
Mild	8	26.7	25	83.3	**P=0.001*** **
Moderate	0	0.0	0	0.0	**df=1**
Severe	0	0.0	0	0.0	

*Significant at p≤0.05

**Highly significant at p≤0.01

***Very high significant at p≤0.001

Table 4.9 showed the children's post-test level of respiratory problem.

In experimental group, 73.3% of the children are having no respiratory problem and 26.7% of them are having mild respiratory problem. None of them are having moderate or severe respiratory problem.

In control group, 16.7% of the children were having no respiratory problem and 83.3% of them are having mild respiratory problem and none of them are having moderate or severe respiratory problem.

There was a statistically significance difference between experiment and control group in the post-test respiratory problem (χ2=19.46 P=0.001).

Statistical significance was calculated using Pearson chi-square test.

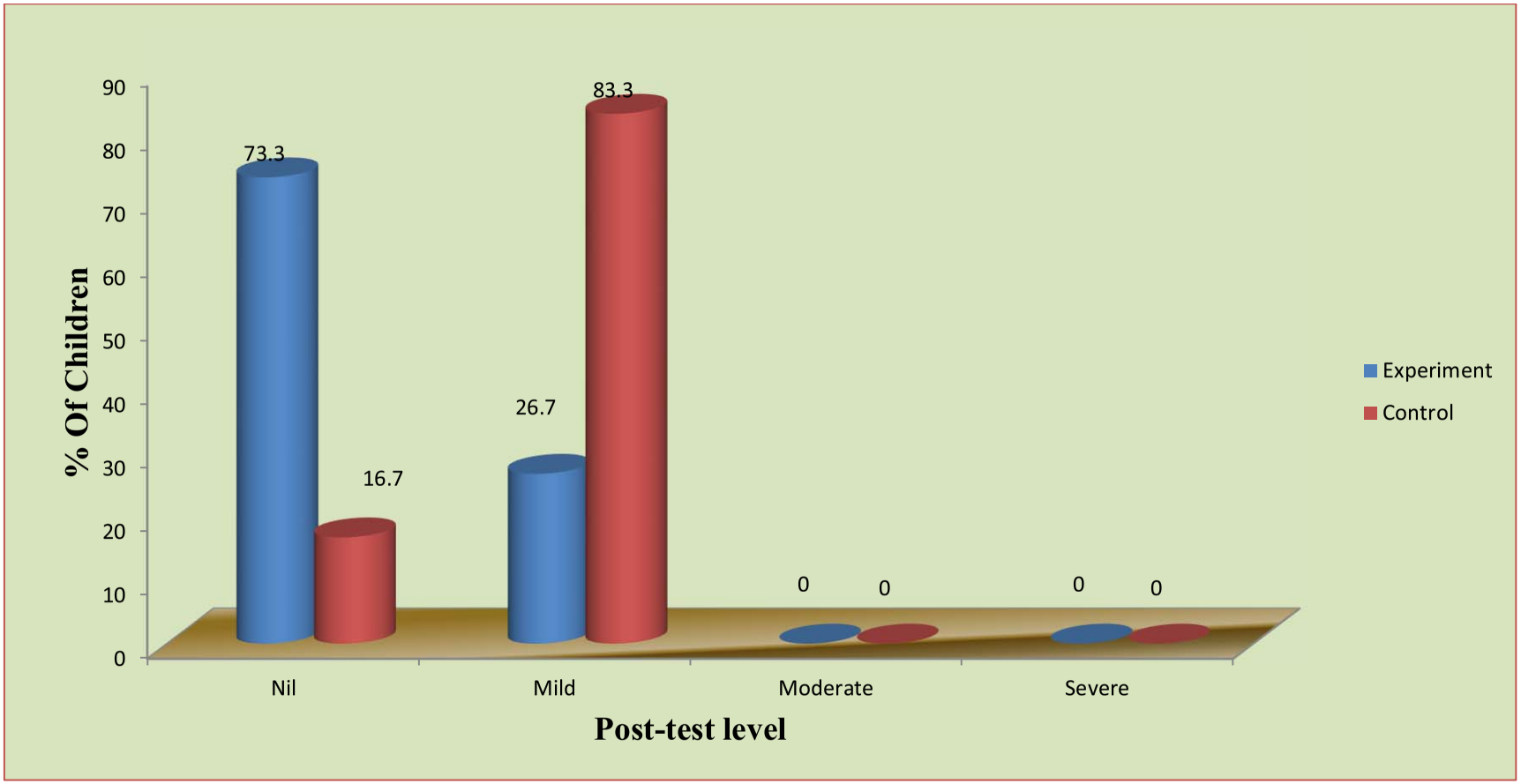


Figure 4.10: Level of post-test respiratory problems

Table 4.10: Effectiveness of breathing exercise in prevention of post-operative respiratory problems

Group	Mean score		Percentage of mean post test score in comparing pre test score	Percentage of prevention of respiratory problems	Net prevention of respiratory problem after breathing exercise
	Pre-test	Post-test			
Experiment	7.13	0.47	(0.47/7.13)x100=6.6%	100-6.6=93.4%	**93.4-64.8=28.6%**
Control	7.37	2.60	(2.60/7.37)x100=35.2%	100-35.2=64.8%	

Table 4.10 showed the effectiveness of breathing exercise on respiratory problem of children.

Experimental group children had 6.6% mean post-test score when comparing the post-test score. Control group children had 35.2% mean post-test score when comparing the pre-test score.

Percentage of prevention of respiratory problem in experimental group was 93.4% and in control group 64.8%.difference in prevention of respiratory problem between two groups (93.4%-64.8%) that is 28.6% more prevention of respiratory problem in the experiment was the net benefit of this study.

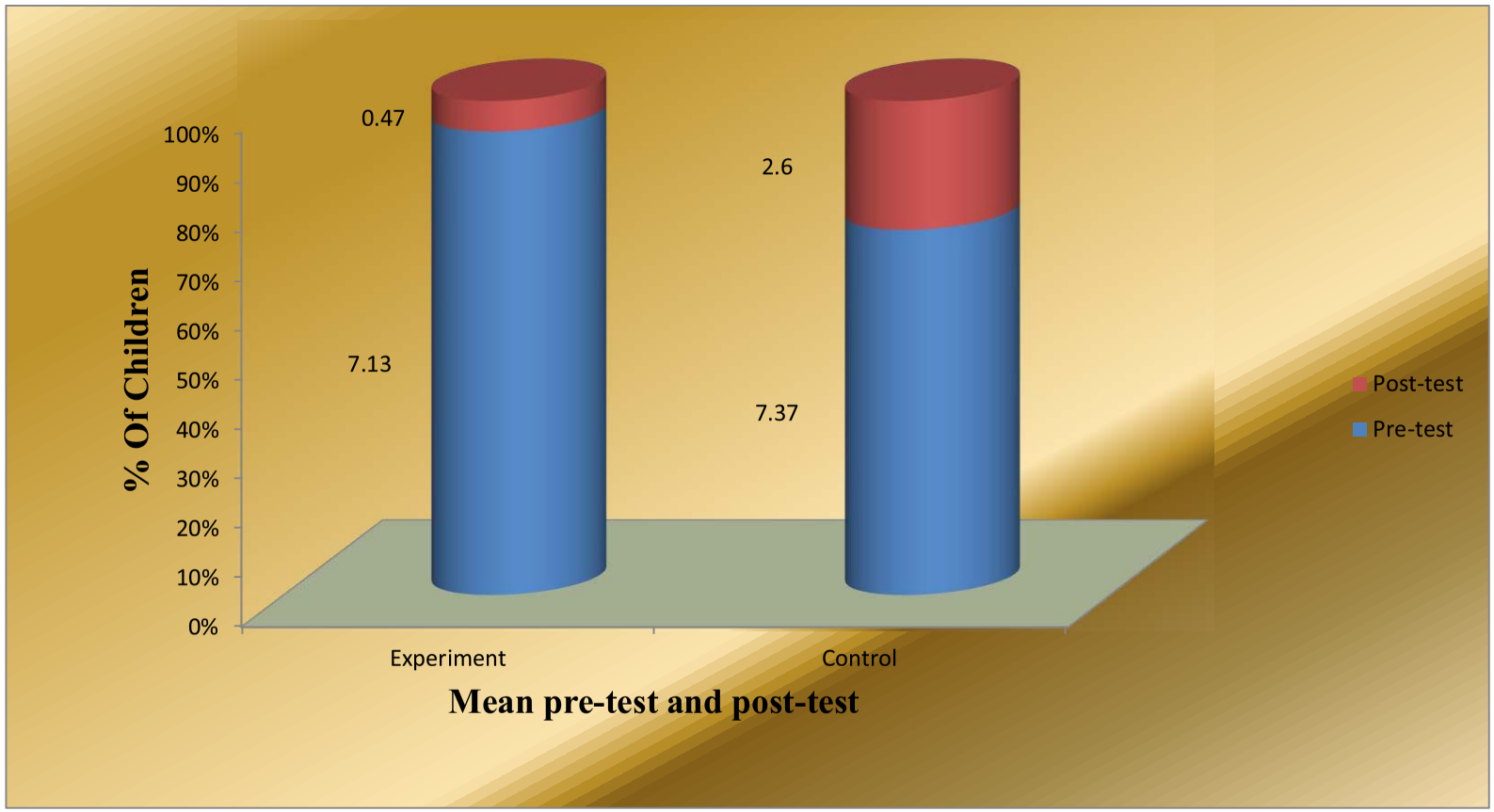


Figure 4.11: Comparison of Mean pre and post-test respiratory score between study groups

Section V: Associating the post-test respiratory status score with selected demographic variables

Table 4.11: Association between post-test grading of respiratory problem and demographic variables

Demographic variables		Experiment group				p-value	Control group				p-value
		No score		Mild			No score		Mild		
		N	in %	N	in %		N	in %	N	in %	
Age	6-9yrs	5	45.4	6	54.6	**χ2=6.90 P=0.001****	1	5.6	17	94.4	**χ2=4.00 P=0.05***
	9-12 yrs	17	89.4	2	10.6		4	33.3	8	66.7	
Gender	Male	15	83.3	3	16.7	χ2=2.30 P=0.13	2	12.5	14	87.5	χ2=0.42 P=0.51
	Female	7	58.3	5	41.7		3	21.4	11	78.6	
Care giver	Mother	20	74.1	7	25.9	χ2 =0.08 P=0.78	5	17.9	23	82.1	χ2=0.42 P=0.51
	Grand mother	2	66.7	1	33.3		-	-	2	100.0	
Educational status	No formal education/ primary school/ collegiate	13	81.3	3	18.8	χ2=1.10 P=0.29	4	21.0	15	79.0	χ2=0.00 P=1.00
	High school/ HSC	9	64.3	5	35.7		1	9.0	10	91.0	
Monthly income	<Rs.4000	16	80.0	4	20.0	χ2 =1.37 P=0.24	4	22.2	14	77.8	χ2=1.00 P=0.31
	>Rs.4000	6	60.0	4	40.0		1	8.3	11	91.7	
Area of living	Rural	12	80.0	3	20.0	χ2=0.05 P=0.83	3	16.7	15	83.3	χ2=0.00 P=1.00
	Urban/ semi urban	10	66.7	5	33.3		2	16.7	10	83.3	
Surgery	Main surgeries	17	89.5	2	10.5	χ2=2.08 P=0.15	3	15.0	17	85.0	χ2=0,28 P=0.59
	Other abdominal surgeries	7	64.0	4	36.0		2	20.0	8	80.0	
Weight for age	Appropriate weight	18	90.0	2	10.0	**χ2=12.13 P=0.001*****	6	37.5	10	62.5	**χ2=8.50 P=0.01****
	Under weight	3	30.0	7	70.0		-	-	14	100.0	
Previous health history	Good health	15	94.0	1	6.0	**χ2=4.45 P=0.04***	5	33.3	10	66.7	**χ2=6.75 P=0.001****
	Repeated illness	8	57.1	6	42.9		-	-	15	100.0	

*Significant at p≤0.05 **Highly significant at p≤0.01

***Very high significant at p≤0.001

Table 4.11 shows the association between demographic variables and post-test level of respiratory problem.

In considering the **age** of the children, among the 19 children in 9-12 years of age group 17(89.4%) had no respiratory problem and 2(10.6%) had mild respiratory problem in the experimental group.

Among the 11 children in 6-9 years age group 5(45.4%) had no respiratory problem and 6(54.6%) had mild respiratory problem in experimental group.

Among the 12 children in 9-12 years age group 4(33.3%) had no respiratory problem and 8(66.7%) had mild respiratory problem in the control group.

Among the 18 children in 6-9 years age group 1(5.6%) had no respiratory problem and 17(94.4%) had mild respiratory problem in the control group.

There was significant association between age and post-test respiratory score. This analysis reveals that the respiratory problem were low in older age children than the younger age children.

In considering the **weight** for age of the children, among the 20 children with appropriate weight 18(90%) had no respiratory problem and 2(10%) had mild respiratory problem in the experimental group.

Among the 10 children with underweight 3(30%) had no respiratory problem and 7(70%) had mild respiratory problem in the experimental group.

Among the 16 children with appropriate weight 6(37.5%) had no respiratory problem and 10 (62.5%) had mild respiratory problem in the control group. Among the 14 children with underweight all the 14(100%) had mild respiratory problem in the control group.

There was significant association between weight for age and post-test respiratory score. This analysis reveals that the respiratory problem were low in children with appropriate weight for age than the children with underweight.

In considering the **previous health status** of the children, among the 16 children with good health 15(94%) had no respiratory problem and 1(6%) had mild respiratory problem in the experimental group.

Among the14 children with repeated illness 8(57.1%) had no respiratory problem and 6(42.9%) had mild respiratory problem in the experimental group. Among the 15 children with good health 5(33.3%) had no respiratory problem and 10(66.7%) had mild respiratory problem in the control group.

Among the 15 children with repeated illness all the 15(100%) had mild respiratory problem in the control group. There was significant association between previous health status and post-test respiratory score.

This analysis reveals that the respiratory problems were low in children with good health than the children with repeated illness. Statistical significance was analyzed using Pearson chi-square test/Yates corrected chi-square test.

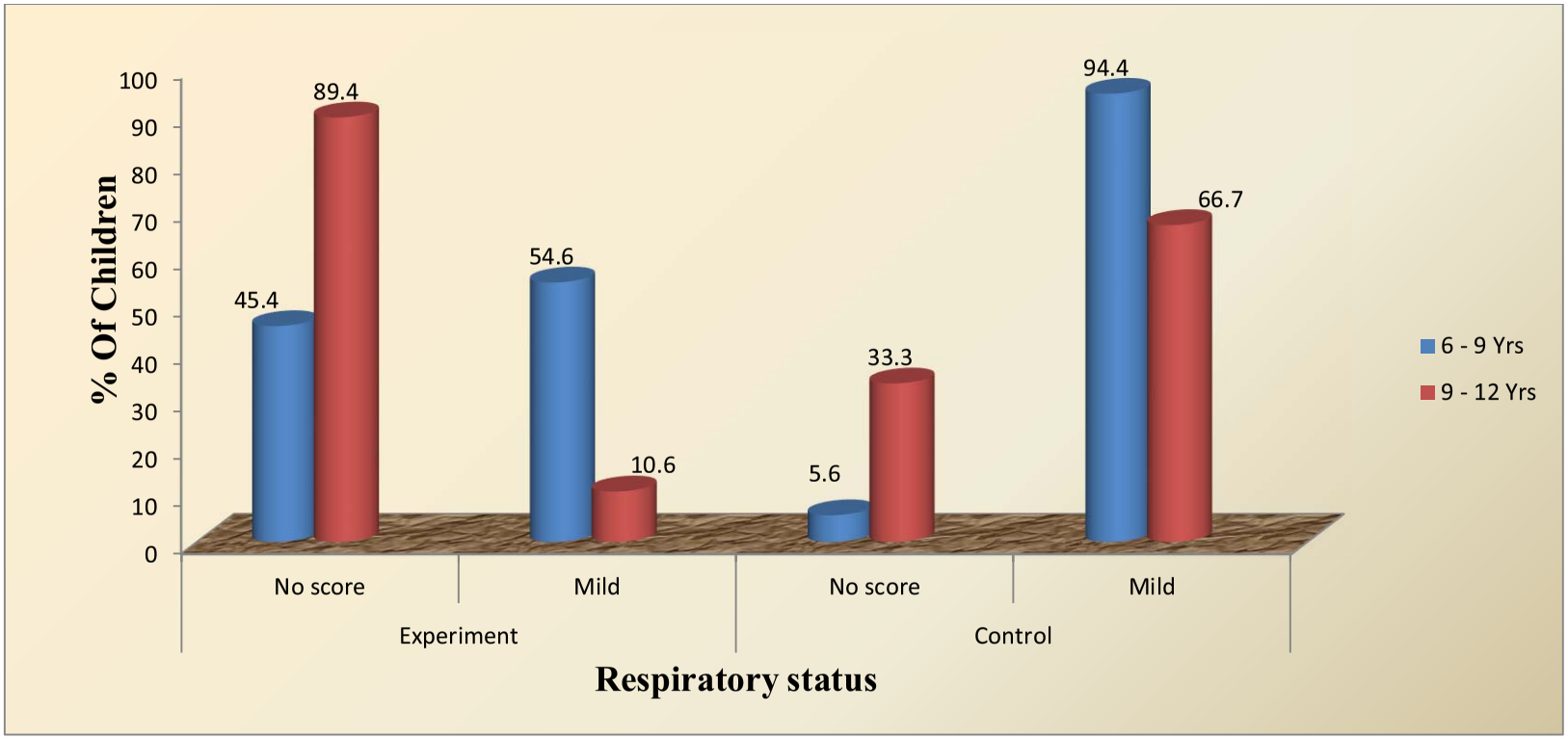


Figure 4.12: Association between grading of post-test respiratory problem and children's age

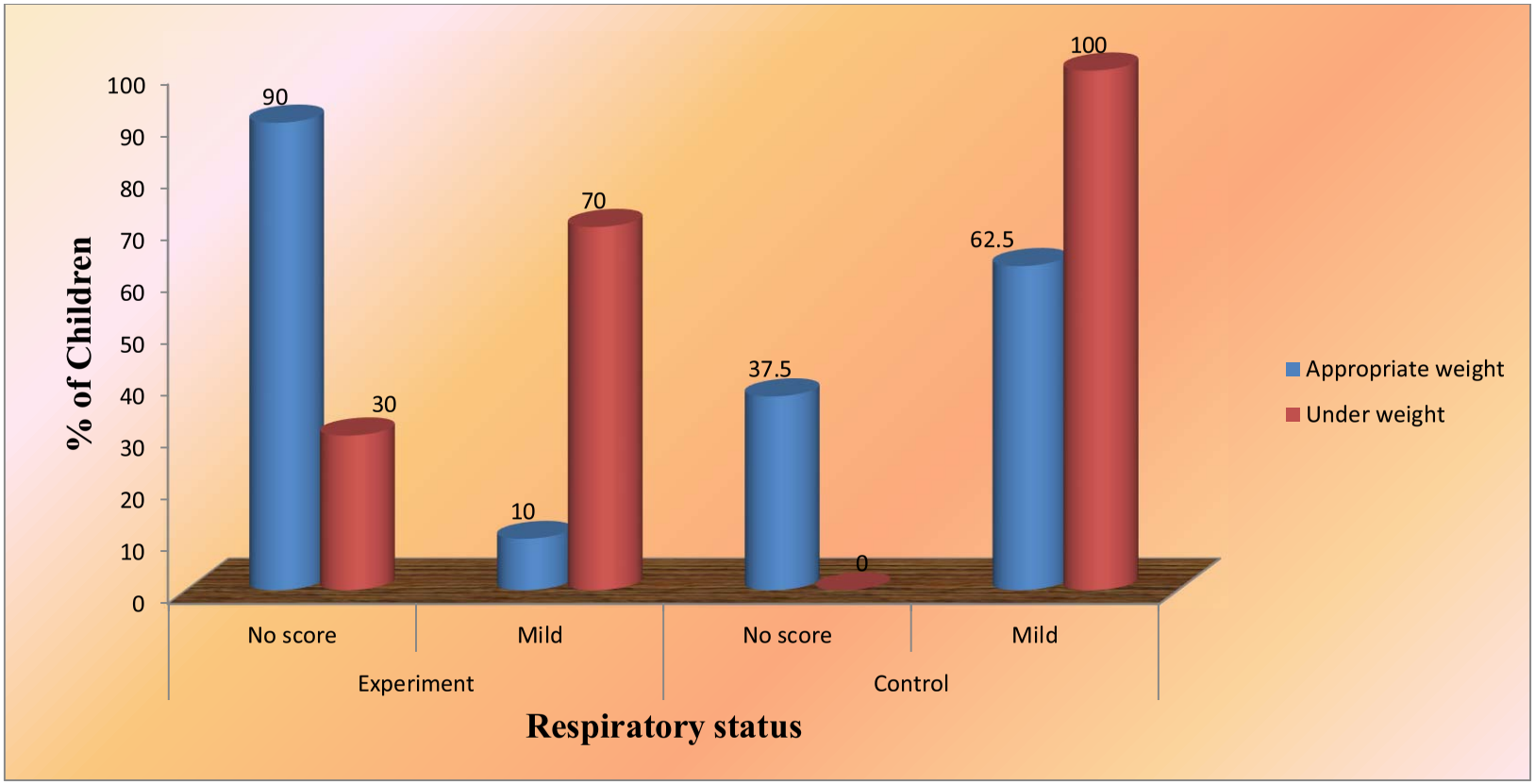


Figure 4.13: Association between grading of post-test respiratory problem and children's weight for age

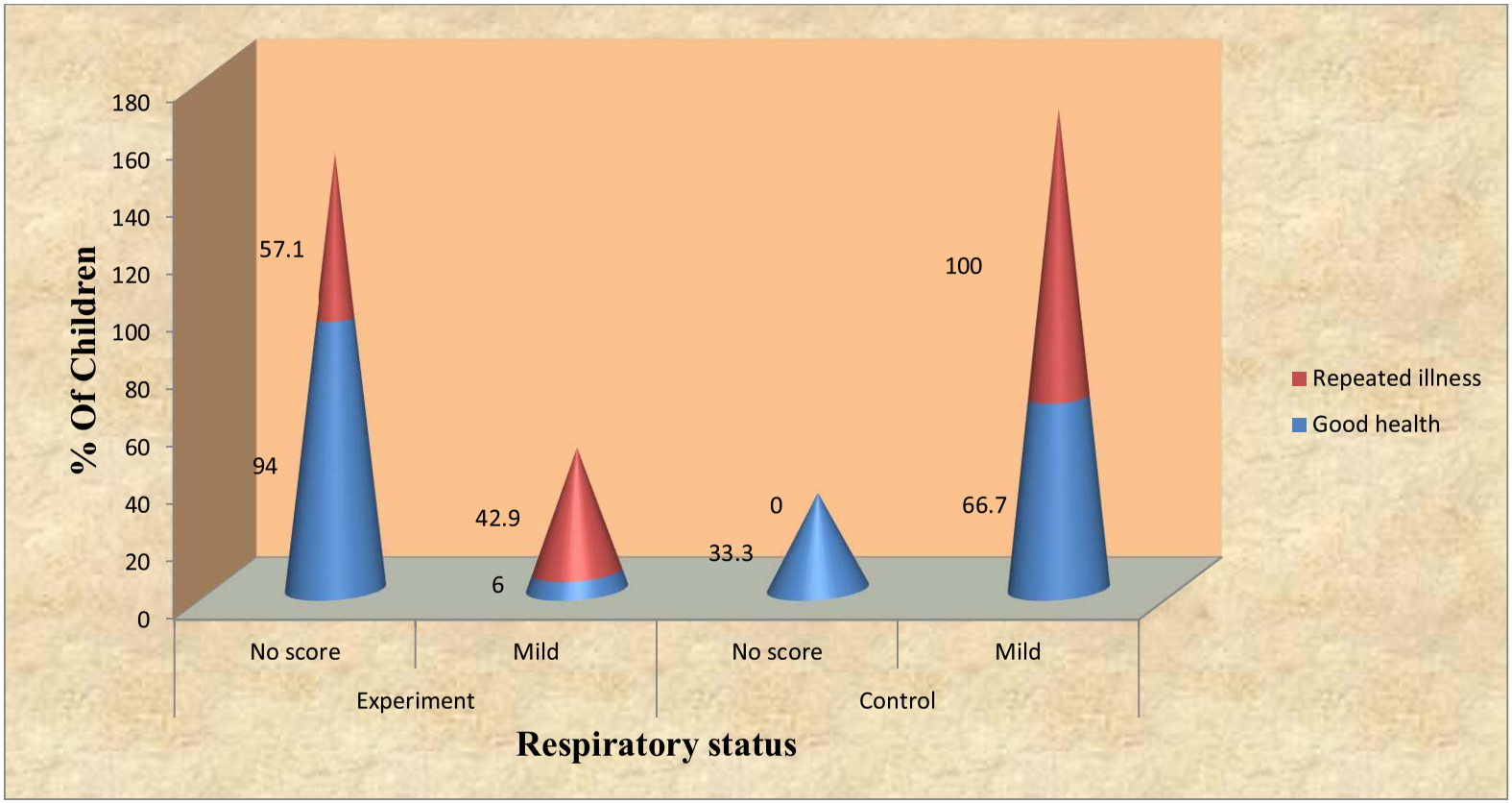


Figure 4.14: Association between grading of post-test respiratory problem and children's previous health history

CHAPTER V

SUMMARY OF RESULT

Summary of the study:

Investigator undertook the study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post-operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post-operative ward at institute of child health and hospital for children, Chennai.

The review of literature was done from primary and secondary sources that formed the basis of selection of problem, formation of the tool conceptual framework and preparation of the protocol.

The conceptual framework was based on the Modified Imogene king's goal attainment theory. It is an open system model prescribed comprehensive framework to achieve the object of the study.

The research approach used in this study was Quasi-experimental approach.

The research design used in this study was non equivalent control group before-after design.

The samples were selected on the basis of purposive sampling technique.

The tool used in this study consists of structured questionnaire for demographic variables and structured observational checklist of respiratory status assessment scale to assess the respiratory status of the children who underwent abdominal surgeries. Experts validated the tool.

The pilot study was done in the pediatric postoperative ward at institute of child health and hospital for children, Chennai with six samples and result showed high consistency.

The reliability was established by cronbanch's Alpha method which was 0.87. The study was found to be practicable and feasible to proceed with the main study.

The main study was conducted on 60 children who underwent abdominal surgeries in the pediatric post-operative ward at institute of child health and hospital for children, Chennai. The samples divided in to two groups according to the convenience of the investigator and each group consists of 30 samples.

The data collected was analyzed and interpreted based on the objectives using descriptive and inferential statistics.

5.1. The major findings of the study:

- **The study findings reveal the following demographic characteristic**

  features of 60 children participated in the present study.

- Forty percentages of the children were in 10-12 years age in the experiment group and 30% were in 10-12 years age in the control group.
- Sixty percentages of the children were male in experiment group and in control group it was 53.3%.
- Ninety percentages of the mothers were the primary care giver in experiment group and in control group it was 93.3%.
- Forty percentages of the primary care giver had primary education in experiment group and in control group it was 50%.
- About 56.7% of the family's monthly income was in Rs. 2000-4000 in

experiment group and it was 53.3% in control group.

- Fifty percentages of the study participants in experiment group were from rural areas and in control group it was 60%.
- About 33.3% of the children in experiment group underwent appendicectomy 40% of the children underwent laparotomy.
- About 66.7% of the children in experiment group had appropriate weight and in control group it was 53.3%.
- About 53.3% of the children were in good health and 50% of the children in control group.

The pretest and posttest respiratory assessment score findings revealed that there was a high statistical significance in experiment group than the control group.

- In the pretest 70% of children had severe respiratory problem and 30 of children had moderate respiratory problem in both groups.

- In the post-test 73.3% of children had no respiratory problem and26.7% of children had mild respiratory problem in the experiment group, whereas in the control group majority (83.3%) of the children had mild respiratory problem and only 16.7% children had no respiratory problem. None of the children had severe or moderate respiratory problem. There was significant difference between experiment group and control group in the post-test level of respiratory problem.

- There was significant difference between mean pre-test and Post-test respiratory status score in experiment group (t=10.74P=0.001 df=29) whereas in the control group there was no significant difference between mean pre-test and post-test respiratory status score (t=2.47 P=2.76 df=29).

- There was significant difference in the mean post-test respiratory status score between experiment group and control group (t=6.61 p=0.001 df=58) whereas in the mean pre-test respiratory status score there was no significant difference between experiment group and control group(t=0.33 P=0.73 df=58).

- The prevention of respiratory problem in experiment group was 93.4% and in control group 64.8%.The difference in prevention of respiratory problem 28.6% was the net benefit of the study. This shows the effectiveness of blowing tarty whistle as a breathing exercise in prevention of postoperative respiratory problems among children after abdominal surgery.

There was a significant association between the post-test respiratory status score and selected demographic variables such as age, weight for age and previous health status.

- Respiratory problems were low in older age children than the younger age children
- Respiratory problems were low in children with appropriate weight for age than the children with underweight.
- Respiratory problems were low in children with good health than the children with repeated illness.

CHAPTER VI

DISCUSSION

In this study the researcher has made an attempt to identify the common respiratory problem and complications among children who underwent abdominal surgeries. Prevention of post-operative respiratory complications after abdominal surgery in pediatric age group is very essential for successful outcome of pediatric surgery. The main aim of the post operative care is identification of complication and prevention.

As per Berg 1986 a good baseline data collected regarding the rate and characteristics of respiration particular signs to look for respiratory problem including coughing, wheezing, shortness of breath, orthopnea, ankle edema, cyanosis, clubbing of fingers, chest pain and barrel chest.

The aim of the study was to assess the effectiveness of breathing exercise to reduce the post-operative respiratory complications after abdominal surgeries. The sample size for this study was 60 which were divided into two groups the experimental and control groups. Pre-test was conducted in the first post-operative day and respiratory exercise by blowing tarty whistle was given for 10 minutes a session and four times in a day for five consecutive days. On sixth postoperative day post-test was done to assess the respiratory status.

The statistical analysis was done based on objectives of the study by using descriptive and inferential statistical methods. The findings of the study have been discussed in this chapter with reference to the objectives and hypothesis stated in introduction and in relation with the findings of other studies.

The details of demographic characteristics of 60 children who participated in this study were as follows.

In considering the **age** wise distribution of children, 40% of children were in 10-12 years of age, 6-8 &8-10 years of age grouped children were 30% in the experimental group. 30% of children were in 10-12 years of age, 26.7% of children were in 8-10 years of age, 43.3% of children were in 6-8% years of age in the control group.

In the **sex** wise distribution, 60% of children were male children and 40% were female children in experimental group. In the control group 53.3% of male children and 46.7% of female children were participated in the study.

In considering the **primary care giver** of the study participants, 90% of children were cared by the mothers and 10% of children were cared by the grand mothers in the experimental group. In the control group, 93.3% of children were cared by the mothers and 6.7% were the grand mothers were participated in the study.

In the experiment group 40%(12) primary care givers had primary **education**, 26.7%(8) had high school education, 20% (6) had higher secondary education, 6.7% (2) had collegiate, and only 6.7%(2) primary care givers were not literate. In the control group 50% (15) primary care givers had primary education, 30% (9) had high school education, 6.7% (2) had higher secondary education, 6.7% (2) had collegiate education, and 6.7% (2) primary care givers were not literate.

In the **monthly income** status of the children's family who are participated in the study, 56.7% of children's family income was Rs. 2000-4000 and 30% of children's family income was Rs.4000-6000 and 10% of children's family income was <Rs.2000 and 3.3% of children's family income was >Rs.6000 in experimental group.

In the control group, 53.3% of children's family income was Rs. 2000-4000 and 26.7% of children's family income was Rs.4000-6000 and 13.3% of children's family income was >Rs.6000 and 6.7% of children's family income was <Rs.2000 in experimental group.

50% of children in experimental group and 60% in control group were from rural **area**. 40% of children in experimental group and 26.7% in control group were from urban area. 10% of children in experimental group and 13.3% in control group were from semi-urban area.

In considering the **type of surgery** that the children had undergone during the study, 33.3% of children had undergone appendicectomy, 3.3% pyloromyotomy, 20% laparotomy, 6.7% pyeloplasty and 36.7% of children had undergone other abdominal surgeries in experimental group.

In control group 26.7% of children had undergone appendicectomy, 40% laparotomy and 33.3% of children had undergone other abdominal surgeries.

In the study participants 66.7% of children were appropriate **weight** for age and 33.3% were under weight in experimental group. In control group 50% of children were appropriate weight and 50% were under weight.

In the **previous health status** of the children who were participated in the study, 53.3% of children were in good health and 46.7% had repeated illness both in experimental group. In control group 50% of children were good health and 50% were in repeated illness.

Objective 1: to assess the pre-test respiratory status of children undergone abdominal surgeries among the experimental group and control group.

It was evident that 20(66.7%) children had moderately increased **respiratory rate** and 10(33.3%) had normal respiratory rate in experimental

group. In control group 22(73.3%) children had moderately increased respiratory rate and 8(26.7%) had normal respiratory rate.

In **pulse rate**, 5(16.7%) children had high pulse rate, 22(73.3%) children had moderately increased pulse rate and 3(10.0%) had normal pulse rate in experimental group. In control group 6(20.0%) children had high pulse rate, 18(60.0%) children had moderately increased pulse rate and 6(20.0%) had normal pulse rate.

In the **skin temperature,** 27(90%) children had increased temperature and 3(10%) children had normal skin temperature in the experimental group. In control group, 29(96.7%) children had increased temperature and 1(3.3%) had normal skin temperature. Only two children in the experimental group had mild chest retractions.

In the experimental group 10(33.3%) children used **accessory muscles** mildly and in the control group 8(26.7%) children used accessory muscles mildly. In the experimental group 20(66.7%) had productive **cough** and 10(33.3%) had non productive cough. In the control group 25(83.3%) had productive cough and 5(16.7%) had non productive cough.

All children had good **air entry** in the lungs both in experimental and control group. In experimental group 8(26.7%) had mild **dyspnea** and in the control group 18(60%) had mild dyspnea.

In the experimental group 8(26.7%) had severe auscultatory crepitations and 20(66.7%) had occasional rales in the lung fields. In the control group 12(40%) had severe auscultatory crepitations and 17(56.7%) had occasional rales in the lung fields. In the experimental group 25(83.3%) had moderately low **oxygen saturation** and in control group 22(73.3%) had moderately low oxygen saturation.

There was no statistically significance difference between experiment and control group children in the pre-test respiratory status.

Objective 2: to assess the post-test respiratory status of children undergone abdominal surgeries among the experimental group and control group.

It shows that all the 30 children had normal **respiratory rate** in both control group and experimental groups.

In the **pulse rate**, 30(100.0%) children had normal in experimental group. In control group 5(16.7%) had moderately increased normal pulse rate and 25(83.3%) had normal pulse rate.

In the **skin temperature**, 30(100.0%) children had normal in experimental group. In control group 13(43.3%) had increased temperature and 17(56.7%) had normal skin temperature. In chest retraction all the 30 children were in no **chest retraction** for both experimental and control group. All the children in experimental and control group were not used their **accessory muscles**.

In the experimental group 8(26.7%) had productive **cough** and 22(73.3%) had no cough. In control group 14(46.7%) had productive cough, 11(36.7%) had non productive cough and 5(16.7%) had no cough. All the 30 children had good **air entry** in the lungs both in experimental and control group. In the experimental group no children had **dyspnea**. In the control group 5(16.7%) had mild dyspnea and 25(83.3%) had no dyspnea.

In the experimental group 4(13.3%) had occasional rales in the lung fields and 26(86.7%) had normal **breath sounds**. In control group 24(80%) had occasional rales in the lung fields and 6(20%) had normal breath sounds. In the experimental and control group all the 30 children were in normal **oxygen saturation.**

There was statistically significant difference between experiment and control group children respiratory status. Pulse, skin, cough, breath scores were low in experiment group considering control group score.

Objective 3: to compare the pre and post-test level of respiratory status between experimental and control groups.

The findings of the present study revealed that the pre-test and post-test level of respiratory problem between experiment and control groups. In the **pre-test**,21 (70%) children had severe respiratory problem and 9 (30%) had moderate respiratory problem in experiment group and 20 (66.7%) children had severe respiratory problem and 10 (33.3%) had moderate respiratory problem in control group. There was no statistical significance between two groups (χ2=0.08, P=3.841, df=1).

But in the **post-test** control group, 25 (83.3%) children had mild respiratory problem and 5 (16.7%) had no respiratory problem and 22 (73.3%) had no respiratory problem. There was very high statistical significance between two groups in the post-test (χ2=19.46, P=0.001, df=1). This shows that there was significant reduction in the level of respiratory problem after blowing tarty whistle breathing exercise.

Objective 4: to evaluate the effectiveness of breathing exercise on the level of respiratory problem among experimental group.

The findings of the present study revealed that the computed pre-test 't' value between experiment and control groups was not significant (t=0.33,P=0.73, df=58) whereas the computed post-test 't' value between experiment and control groups was highly significant (t=6.61, P=0.001, df=58) . The mean post-test value was lower in experiment group (0.47 when comparing to the control group (2.60).

This shows that there was significant reduction in postoperative respiratory problems after blowing tarty whistle breathing exercise.

The percentage of mean score between pre-test and post-test in experiment group was 6.6%and it was 35.2%in control group. The net reduction in respiratory problem after breathing exercise was 28.6% which

shows that the blowing tarty whistle breathing exercise was more effective in reducing postoperative respiratory problems.

Jaap Drinkers et al (2007) conducted a randomized controlled study on prevention of postoperative pulmonary complications after abdominal surgeries in 40 patients. Eight patients in the control group and one patient in the experimental group developed post operative respiratory complications. Postoperative breathing exercises are well tolerated and appreciated and seem to reduce the incidence of post operative respiratory complications in patients' undergone abdominal surgeries which supports the present study.

Objective 5: to associate the post-test respiratory score with selected demographic variables.

The findings of the present study showed that there was significant association between post-test level of respiratory problems and selected demographic variables such as age, weight for age and previous health status. There was no significant association between post-test level of respiratory problem and demographic variables such as gender, primary care giver, educational status of the care giver, income of the family, area of living and type of surgery.

A study was conducted to analyze the incidence and risk factors of developing postoperative pulmonary complications. The results showed that the prior health status of the patient and the effects of anesthesia and surgical trauma, age, general co-morbidity, nutrition, fluid overload, pre-existing respiratory and

cardiac diseases, the use of general anesthesia and the overall surgical insult were the most significant factors associated with post-operative respiratory complications which supports the present study.

Hypotheses:

H_1: There will be significant difference between the pre-test and post-test respiratory status of children (6-12 years) underwent abdominal surgery at selected post-operative ward.

Comparing the pre and post-test respiratory status level of children revealed a significant‘t’ value of t= 10.74 P= 0.001 df=29.

H2: There will be significant improvement in respiratory status of children who underwent abdominal surgeries after breathing exercise in comparing with control group.

The improvement of respiratory status in children after blowing tarty whistle showed a statistical significant ‘t’ value of t=6.61 P= 0.73 df= 58.

H3: There will be a significant association between the post-test respiratory status of children who underwent abdominal surgeries and selected demographic variables.

Using Chi-square significant association was found in the respiratory status with the demographic variables like age, weight for age and previous health status.

From the findings of the present study it was concluded that the practice of breathing exercise will reduce the incidence of post-operative respiratory problems. Thus the hypotheses was proved statistically.

.

CHAPTER VII

CONCLUSION AND RECOMMENDATIONS

7.1. Implications:

The investigator has drawn the following implication for the study which is vital concern in the field of nursing service, nursing education nursing administration and in nursing research.

Implication for Nursing practice

- Advance nursing practice is one of the evolving trends in nursing. In which hospital has the specified role for the nurses. The nurse specialists play a pivotal role in helping the patient to reduce the discomfort by providing quality care to prevent the post operative respiratory problems.
- Nursing personnel are in best position to impart breathing exercise in the hospital, home and in the community as a part of their treatment program for abdominal surgeries.
- The study signifies the importance of teaching the breathing exercise to the children who underwent abdominal surgery.
- The study will give insight to all nursing personnel to give appropriate breathing exercise to all the children who underwent abdominal surgery in order to control the respiratory problems.
- This study will help the nurse practitioner to independently give breathing exercise rather than the other modalities in the management of children with abdominal surgery.
- Video shows and demonstration can be arranged for parents with children who underwent abdominal surgery.

Implication for Nursing administration

- The administrator has the responsibility to ensure the proper standard of practice with regular supervision.
- The nurse administrator should formulate the policy guidelines regarding the system of care to be given to patient to prevent the post operative respiratory problems.
- The number of staff in the surgical wards and postoperative unit must be increased so that they can teach and practice breathing exercise.
- Simple balloon and blowing tarty whistle can be supplied to the surgical pre and post operative wards so that the exact improvement in respiratory status and pulmonary function can be monitored.
- Pamphlets regarding breathing exercise can be prepared and given to the parents.
- Charts regarding the method of breathing exercise can be fixed in the surgical wards so that it may motivate the parents to teach breathing exercise for their children appropriately.

Implication for Nursing education

- The study had clearly proved that the breathing exercise was effective in improving the respiratory functions.
- To practice this, the nursing personnel need to be equipped with adequate knowledge regarding the breathing exercise.
- This content should be added in to the nursing curriculum, so that the nursing students can come to know about breathing exercise and its uses in improving the respiratory function.
- Nursing students must be posted in respiratory care units to gain more skill in implementing breathing exercise and assessing its effects among children with major abdominal surgery.
- Short term course can be started to train nurses in respiratory care with emphasis on breathing exercise.

Implication for Nursing research

- Research is a never-ending process of acquiring knowledge that may enhance a result on its completion. Nurses need to attend more conferences to acquire inquisitive knowledge.
- This research study can serve as stepping stone for the various other studies in the future.
- Nursing researcher can encourage clinical nurse to apply the research finding in their daily nursing care activities and can bring about new technique to comfort the patients.
- Dissemination of findings through conference, professional journals will make the application of research findings too effective.
- This study also brings about the fact that more studies needed to be conducted by comparing the different type of breathing exercise and other
  maneuvers in improving the respiratory function.
- Extensive research must be conducted in the area to identify the physiological effect of breathing exercise improving the respiratory function.

7.2. Limitations:

- The sample size limited to 60 children
- The study was limited to only in post operative ward in Institute of Child Health, Chennai.

7.3. Recommendations for further study:

- A similar study can be done including pre operative baseline assessment and implementation of respiratory exercise.
- Similar study can be conducted for larger samples.
- A true experimental study can be conducted to assess the effectiveness of blowing tarty whistle in prevention of postoperative respiratory problems.

- A similar study can be conducted by measuring arterial blood gas to find out the effect of the breathing exercise.
- Similar kind of study can be conducted for patients who have other respiratory problems.
- The same study can be done including other variables such as chest X-ray, sputum test as a parameter to assess the respiratory status.
- The replication study can be conducted by administering breathing exercise for larger duration.
- A similar study can be conducted to assess the skill of staff nurses regarding breathing exercise.
- A similar study can be conducted to evaluate the effect of breathing exercise with the help of blowing balloon and blowing tarty whistle independently.
- A comparative study can be done to assess the cost effectiveness with other methods of breathing exercise.

Conclusion:

Nursing personnel must have holistic knowledge regarding the different aspects of breathing exercise to prevent the post-operative respiratory problems among the children who underwent abdominal surgeries. Nurses play a vital role in the teaching aspects of breathing exercise. To achieve this goal, the nursing personnel must educate the children and parents about the appropriate breathing exercise methods. One among the breathing exercise method is blowing tarty whistle respiratory exercise. This intervention was found to be very effective in the prevention of post-operative respiratory problems, but it needs more strengthening of practice and supervision to improve the quality of care.

REFERENCES

1. Basavanthappa B.T., (1998). Nursing research, (3rd ed.). New Delhi: Jaypee brothers
2. Dorothy R. Marlow., & Barbara C. Redding. (1998). Text book of Pediatric Nursing, (6th ed.). Philadelphia: Saunders.
3. Ghai, O.P, (2004). Essential Pediatrics,(6th ed.). New Delhi:CBS Publisher
4. Gupta. S.P, (1991). Statistical Method, (3rd ed.). New Delhi: Sultan Chand
5. Polit and Heingler, (1996). Nursing Research Principal and Method, (5th ed.). Philadelphia : J.P. Lippincott
6. Subramanyam. L. et al (1996). Essential of Pediatric Pulmonology, (2nd ed.). Chennai: Siva & Co
7. Thomas W. Shields, et al. (2004). General thoracic surgery, (6th ed.). Vol. I, Lippincott: Williams & Wilkins.
8. Anderson J.MInnocenti. D.M (1993), Techniques used in chest physiotherapy, Fourth Edition, New Delhi: Jaypee Brothers Medical Publication
9. Abdellah (1978).Patient care through Nursing research,(3rd ed.). New Delhi: Jaypee brothers.
10. Kendig's, (2006). Disorders of the respiratory tract in children (7th ed.). Philadelphia:Saunders.
11. Casaburi. R. & Pett. T.L., (1993). Principles and Practice of Pulmonary rehabilitation, (5th ed.). Philadelphia: Saunders.
12. Coroson J, (1995) Progressive Exercise therapy in rehabilitation, Third Edition, New Delhi: John wrigh and Sons.
13. Donna L.F, (1982). Chest Physiotherapy and pulmonary rehabilitation, (2nd ed.). U.S.A: Inc Chicago year book Medical Publication
14. David, H. Eubanks, et al. (1958). Comprehensive respiratory care (1st ed.). Missouri: Mosby.

15. Fawcett Jacquiline (1998).Analysis and evaluation of conceptual Model of Nursing (1st ed.). Philadelphia: F.A. Davis.
16. Gardener. D.M, (1976). The Principle of Exercise therapy(3rd ed.). Philadelphia: Bella and Sons.
17. Sodashy and Yalfe B.J, (1993).Nursing theory analysis application evaluation, (2nd ed.). Boston: Little Brown
18. Kothari. C.R, (1998). Research Methodoloty Methods and Techniques,(1st ed.). Whiey Eastern Ltd
19. McMillan. J.H., Schumacher,(1998), Research in education conceptual introduction, New York: Harper collies.

Journal

1. Arozullah, (2002), Risk index for postoperative pneumonia, Journal of Annals of internal medicine, 137(7):620.
2. Anoop J. Chauhan, et al. (1992), Regular balloon inflation for patient with chronic bronchitis, a randomized control trail, British Medical Journal, 304(27):1668-1669
3. Alexander C.M.et al. (1998), Principal of pulse-oxymeter theoretical and practical consideration, Journal of Anaesth Analog, 68-368
4. Brooks – Brunn J.A, (2006), Postoperative atelectasis and pneumonia, Journal of Annual Internal medicine, 144(8):596-608
5. Balachandran A. et al. (2005), Chest Physiotherapy in Pediatrics, Indian pediatrics, (42):559-567
6. Castillo R. Hass A, (2002), Chest physical therapy comparative efficiency of preoperative and postoperative client, Journal of Arch Physician Medical Rehabilitation, 66(6): 376-9
7. Garrod R. Lasserson T, (2007), role of Physiotherapy in chronic lung disease of overview of systematic review, Journal of respiratory Medicine, 101 (12): 2429-2436
8. Hayden S.P. et al. (1995), Postoperative pulmonary complication , Clave Clinical Journal of Medicine, 401-407.

9. Julia, (2000), The physiology Management of patient under going thoracic surgery, Physiotherapy research international Journal, 12(2): 59-71.
10. Lie C. et al. (1998), Lung physiotherapy as prophylaxis against atelectasis and pneumonia, Journal of Ugeskr Leager, 24(106):3540-3544.
11. Mancini D.M. et al. (2008), Incentive spirometry (or) breathing exercise, Journal of American College of Cardiology, 51: 163-197.
12. Mathew J.J et al. (1999), Respiratory complication in postoperative patients, Journal Association for physician India, 1086-1088.
13. Nava, (2007), Preoperative muscle training and postoperative complications, The Journal of America Medical Association, 297:697.
14. Razarquia and Jayr, (2003), Identify the risk factor for postoperative pulmonary complication, Journal of AORN, 84(4):615-625.
15. Sanja Jelic et al. (2008), Airway hygiene in the intensive care unit, Journal of Critical care, 12:209.

Web sites

1. Search. Proquest.com
2. www.yahoo.com
3. www.healthline.com
4. www.medindia.com
5. www.medical-web-designs.net/wikipedia.org
6. www.webmd.com
7. www.pubmed.com
8. www.respirnet.com

INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE, CHENNAI-3

EC Reg No.ECR/270/Inst./TN/2013
Telephone No. 044 25305301
Fax : 044 25363970

CERTIFICATE OF APPROVAL

To
Ms. RAJENDRAN SHANTHI
M.Sc., (Nursing)
College of Nursing
Madras Medical College,
Chennai – 600 003.

Dear Ms. RAJENDRAN SHANTHI ,

The Institutional Ethics Committee has considered your request and approved your study titled **A STUDY TO ASSESS THE EFFECTIVENESS OF BLOWING TARTY WHISTLE AS A PLAY WAY METHOD OF BREATHING EXERCISE ON PREVENTION OF POST –OPERATIVE RESPIRATORY PROBLEMS AMONG THE CHILDREN AGE GROUP OF 6-12 YEARS WHO UNDERWENT ABDOMINAL SURGERY IN SELECTED POST OPERATIVE WARD AT INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN" ,EGMORE.. No.27102014.**

The following members of Ethics Committee were present in the meeting held on 21.10.2014 conducted at Madras Medical College, Chennai-3.

1. Dr.C.Rajendran, M.D.,	: Chairperson
2. Dr.R.Vimala, M.D., Dean, MMC, Ch-3	: Deputy Chairperson
3. Prof.B.Kalaiselvi, M.D., Vice-Principal, MMC, Ch-3	: Member Secretary
4. Prof.R.Nandhini, M.D., Inst.of Pharmacology, MMC	: Member
5. Prof.K.Ramadevi, Director i/c, Inst.of Biochemistry, MMC	: Member
6. Prof.Saraswathy, M.D., Director, Pathology, MMC, Ch-3	: Member
7. Prof.S.G.Sivachidambaram, M.D., Director i/c, Inst.of Internal Medicine, MMC	: Member
8. Dr.Balakrishnan, M.S., Director, Inst.of Surgery, MMC	: Member
9. Thiru S.Rameshkumar, Administrative Officer	: Lay Person
10.Thiru S.Govindasamy, B.A., B.L.,	: Lawyer
11.Tmt.Arnold Saulina, M.A., MSW.,	: Social Scientist

We approve the proposal to be conducted in its presented form.

The Institutional Ethics Committee expects to be informed about the progress of the study and SAE occurring in the course of the study, any changes in the protocol and patients information/informed consent and asks to be provided a copy of the final report.

Member Secretary, Ethics Committee

MEMBER SECRETARY
INSTITUTIONAL ETHICS COMMITTEE
MADRAS MEDICAL COLLEGE
CHENNAI-600 003

From

Mrs.Rajendran shanthi,
M.Sc. (N) II year,
College of Nursing,
Madras Medical College,
Chennai - 600003.

To

The Director,
Institute of child health and hospital for children,
Egmore,
Chennai-08.

Through Proper Channel

Respected Sir**,**

Sub: Requesting for permission to conduct a nursing research study-regarding

I Rajendran shanthi, M.sc Nursing I year, College of Nursing, Madras Medical College, request you to kindly grant me permission to conduct nursing research study on the topic **'A STUDY TO ASSESS THE EFFECTIVENESS OF BLOWING TARTY WHISTLE AS APLAY WAY METHOD OF BREATHING EXERCISE ON PREVENTION OF POST–OPERATIVE RESPIRATORY PROBLEMS AMONG THE CHILDREN AGE GROUP OF 6-12 YEARS WHO UNDERWENT ABDOMINAL SURGERY IN SELECTED POST OPERATIVE WARD AT INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN" CHENNAI.** As partial fulfillment of dissertation study for the degree of Master of Science in Nursing.

I assure you that it will not interfere with the routine activities of the study settings as well as keep confidentiality and anonymity of each child.

Thanking you

Place: Yours obediently,

Time: (Rajendran shanthi)

Forwarded.

Director and Superintendent
Institute of Child Health and
Hospital for Children
Egmore Chennai - 600 008

7/7/15

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Mrs. Rajendran shanthi MSc (N) II year student, college of nursing, Chennai-03 for her topic **'A STUDY TO ASSESS THE EFFECTIVENESS OF BLOWING TARTY WHISTLE AS APLAY WAY METHOD OF BREATHING EXERCISE ON PREVENTION OF POST–OPERATIVE RESPIRATORY PROBLEMS AMONG THE CHILDREN AGE GROUP OF 6-12 YEARS WHO UNDERWENT ABDOMINAL SURGERY IN SELECTED POST OPERATIVE WARD AT INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN" CHENNAI -08'** is validated by me and she can proceed with this tool to conduct the main study.

SIGNATURE :

NAME : MRS. MAHIBA JANICE

MADHA COLLEGE OF NURSING
15 JUL 2015
CHENNAI - 600 069

SEAL : 15.07.15

DATE :

CERTIFICATE OF CONTENT VALIDITY

This is to certify that the tool developed by Mrs. Rajendran shanthi MSc (N) II year student, college of nursing, Chennai-03 for her topic **'A STUDY TO ASSESS THE EFFECTIVENESS OF BLOWING TARTY WHISTLE AS APLAY WAY METHOD OF BREATHING EXERCISE ON PREVENTION OF POST–OPERATIVE RESPIRATORY PROBLEMS AMONG THE CHILDREN AGE GROUP OF 6-12 YEARS WHO UNDERWENT ABDOMINAL SURGERY IN SELECTED POST OPERATIVE WARD AT INSTITUTE OF CHILD HEALTH AND HOSPITAL FOR CHILDREN" CHENNAI -08'** is validated by me and she can proceed with this tool to conduct the main study.

SIGNATURE :

NAME : S. V. SENTHILNATHAN

SEAL : Senior Civil Surgeon
Institute of Child Health and
Hospital for Children
Egmore, Chennai-600 008

DATE :

QUESTIONNARIE

APPENDIX – 1

SECTION-A DEMOGRAPHIC VARIABLES:

SAMPLE NO : ☐

1. Name of the child

2. Age of the child

a. 6-8years ☐

b. 8-10years ☐

c. 10-12years ☐

3. Sex of the child

a. Male ☐

b. Female ☐

4. Primary care giver

a. Mother ☐

b. Father ☐

c. Grand father ☐

d. Grand mother ☐

5. Educational status of the primary care giver

a. No formal education ☐

b. Primary education ☐

c. High school education ☐

d. Hr.sec. education ☐

e. Collegiate education ☐

6. Monthly income of the family

a. Below Rs.2000/-

b. Rs.2000-4000/-

c. Rs.4000-6000/-

d. Above Rs.8000/-

7. Area of living

a. Rural

b. Urban

c. Semi urban

8. Type of surgery

a. Appendicectomy

b. Colostomy & colostomy closure

c. Pyloromyotomy

d. Laparotomy

e. Pyeloplasty

f. Other abdominal surgeries

9. Weight for age

a. Appropriate weight

b. Under weight

c. Over weight

10. Previous health history

a. Good health

b. Repeated illness

ÀÌ¾¢ « - §¿÷Ó¸ ¸¡½ø ÀÊÅõ

¦°¡ó¾ ÌÈ¢ôÒ ÀüÈ¢Â ¦À¡Ð Å¢ÀÃõ

Á¡¾¢¡¢ ±ñ: ☐

1. ÌÆó¨¾Â¢ý ¦ÀÂ÷

2. ÌÆó¨¾Â¢ý ÅÂÐ

«. 6-8 ÅÂÐ ☐

¬. 8-10 ÅÂÐ ☐

þ. 10-12 ÅÂÐ ☐

3. ÌÆó¨¾Â¢ý À¡Ä¢Éõ

«. ¬ñ ☐

¬. ¦Àñ ☐

4. ÌÆó¨¾¨Â ÀÃ¡Á¡¢ìÌõ ¿À÷

«. ¾¡ö ☐

¬. ¾ó¨¾ ☐

þ. ¾¡ò¾¡ ☐

®. À¡ðÊ ☐

¯. À¢È÷ ☐

5. ÌÆó¨¾¨Â ÀÃ¡Á¡¢ôÀÅ¡¢ý ¸øÅ¢ÂÈ¢×

«. ±Ø¾ ÀÊì¸ ¦¾¡¢Â¡¾ ☐

¬. ¦¾¡½ì¸ì ¸øÅ¢ ☐

þ. ¯Â÷¿¢¨Äì ¸øÅ¢ ☐

®. §ÁØ¿¢¨Äì ¸øÅ¢ ☐

¯. ¸øæ¡¢ì ¸øÅ¢ ☐

6. ÌÎõÀò¾¢ý Á¡¾ ÅÕÁ¡Éõ

«. å.2000ìÌ ¸£ú

¬. å. 2000-4000

þ. å.4000-6000

®. å.6000ìÌõ §Áø

7. Å°¢ôÀ¢¼ò¾¢ý ¾ý¨Á

«. ¸¢Ã¡Áô ÀÌ¾¢

¬. ¿¸Ãô ÀÌ¾¢

þ. ¸¢Ã¡Áõ ÁüÚõ ¿¸ÃÁøÄ¡¾ ¿Îò¾Ãô ÀÌ¾¢

8. «Ú¨Å °¢¸¢î¨° Å¨¸

«. ´ðÎìÌ¼ø ¿£ì¸õ

¬. ¦¸¡Ä¡Š¼Á¢ & ¦¸¡Ä¡Š¼Á¢ ãÎ¾ø

þ. ¨À§Ä¡§Ã¡ÁÂ¡¼Á¢

®. §ÄÀÃ¡¼Á¢

¯. ÀÂ§Ä¡À¢Ç¡ŠÊ

°. þ¾Ã ÅÂ¢üÚ «Ú¨Å °¢¸¢î¨°¸û

9. ÅÂ¾¢ü¸¡É ±¨¼

«. °¡¢Â¡É ±¨¼

¬. Ì¨ÈÅ¡É ±¨¼

þ. «¾¢¸Á¡É ±¨¼

10. Óó¨¾Â ¯¼ø¿¢¨Ä ÀüÈ¢Â Å¢ÀÃõ

«. ¬§Ã¡ì¸¢ÂÁ¡É ¿¢¨Ä

¬. «Êì¸Ê §¿¡öÅ¡öôÀÎ¾ø

Section B: Respiratory Status Assessment Scale

S.No	Features observed	Mild score 0	Moderate score 1	Severe score 2
1.	Respiratory rate	25-30 / mts	30-40 / mts	40-60 / mts
2.	Pulse rate	80-100/mt	100-120/mt	>120/mt
3.	Skin temperature	37◦c	37◦c-39◦c	>39◦c
4.	Chest retraction	None	Just visible	Marked
5.	Use of accessory muscles	None	Moderate usage	Maximal activity
6.	Cough	None	Non-productive	Productive
7.	Air entry	Bilateral	Unilateral	Diminished Bilaterlly
8.	Dyspnea	Nil	On activity	At rest
9.	Breath sound	Normal vesicular breath sound	Occasional rales	Creptations
10.	Oxygen saturation	98-100%	95-97%	< 95%

SCORE:

0 - No respiratory problem
1- 6 - Mild respiratory problem
7 - 13 - Moderate respiratory problem
14 - 20 - Severe respiratory problem

Section C: Respiratory Status Assessment Tool (Observation checklist)

S.No	Features observed	Pre test before intervention (On 1st POD)			Post test after 4 days of intervention (on 6th POD)		
		score 0	Score 1	Score 2	Score 0	Score 1	Score 2
1.	Respiratory rate						
2.	Pulse rate						
3.	Skin temperature						
4.	Chest retraction						
5.	Use of accessory muscles						
6.	Cough						
7.	Air entry						
8.	Dyspnea						
9.	Breath sounds						
10.	Oxygen saturation						
Total score							

Pre test score **post test Score**

Scoring

0 - No respiratory problem

1- 6 - Mild respiratory problem

7 -13 - Moderate respiratory problem

14 -20 - Severe respiratory problem

APPENDIX-II

BREATHING EXERCISE

Introduction:

Breathing exercise and respiratory muscle exercise help to retrain the muscle of respiration and improve ventilation and oxygenation. Teaching the exercise properly and making them to practice continuously will help the subject to improve the oxygen saturation level.

Effect of respiratory problems:

If the patient respiratory tract is to function normally it must be kept clear of secretion. After surgery in some patient the clearing mechanism fails that result in secretion accumulation, which causes lung infection, infected lungs blocks the smaller bronchi and it can cause atalectasis. This problems can be prevented by variety of treatment modalities. One of the important and most effective treatment modalities are breathing exercise.

Breathing exercise can control the respiratory rate and pattern to decrease the air trapping. It attempt to decrease the work of breathing improve the position and the function of the respiratory muscles and diaphragmatic muscles. It also helps to control shortness of breath and improves ventilation. It improves the strength and endurance of muscles of inspiration and expiration and lessens the occurrence of inspiratory and expiratory muscle fatigue.

Breathing exercise:

Breathing exercise were design to retrain the muscles of respiration and improve ventilation and improve oxygenation. Periodic breathing exercise aerates the lungs inflating alveoli and maintaining respiratory function. Deep breathing stimulates the production of surfactant produced by the alveoli cells. This increases the elasticity of lung tissues, producing a more uniform distribution of air in the alveoli.

Goal of breathing exercise:

- Improves the strength of the diaphragm and other muscles of respiration
- Help to bring up the deep seated mucous secretion
- Keep the lungs and chest wall mobile
- To stimulate circulation and improves oxygenation
- To promote comfort and involves the child in play activities
- To improve muscle tone
- Increase the effectiveness of the cough mechanism
- To expand lungs and keep the airway open
- Improve the efficacy of respiration
- Helps in lung expansion and keeps the airway open

Blowing tarty whistle procedure:

Mothers / care giver and children were demonstrated the method of blowing tarty whistle as a breathing exercise in the previous day of surgery. Child was asked to sit in upright position and inhale fully through the nose and to exhale the air into the blowing tarty whistle to blow the whistle to the maximal level. The children and mothers / care givers were instructed to practice the breathing exercise for 10 minutes per session and the frequency is four times in a day.

Other forms of breathing exercises which can be practiced in children are coughing, balloon, ball blowing, blowing a mouth organ, whistling.

Advantages of breathing exercise:

- It is a cheap and cost effective
- It is user friendly
- It does not require laborious procedure
- No side effect
- Easy to practice
- It can be performed without supervision
- It is one of the play way method so the children's active participation is more
- It can be practiced in the home after discharge from the hospital

ãîÍ ÀÂ¢ü°¢ ÀüÈ¢Â ¦°Âø Ó¨È Å¢Çì¸õ

«È¢Ó¸õ

ãîÍ ÀÂ¢ü°¢ ÁüÚõ Ñ¨ÃÂ£Ãø °õÀó¾À𽠀Â¢ü°¢Â¢ý ãÄõ Ñ¨ÃÂ£Ãø ¾¨°¸û ÅÖÅ¡ì¸ôÀðÎ, À¢Ã¡½Å¡Ô «¾¢¸Á¡¸ À¡¢Á¡üÈõ ¦°öÂôÀÎ¸¢ýÈÐ. ¬¾Ä¡ø ãîÍ ÀÂ¢ü°¢Â¢¨É ¸üÚì¦¸¡Îòð, Ó¨ÈÂ¡¸ ÀÂ¢ü°¢Â¢¨É §Áü¦¸¡ûÅ¾ý ãÄõ À¢Ã¡½Å¡Ô¨Å ±Îòð ¦°øÖõ ¾¢È¨É «¾¢¸¡¢ôÀÐ½ý,À¢Ã¡½Å¡Ô À¡¢Á¡üÈÓõ ¿¨¼¦ÀüÚ Ñ¨ÃÂ£Ãø °õÀó¾Á¡É À¢Ãî°¨É¸û ²üÀ¼¡Áø ¾Îì¸ôÀÎ¸¢ýÈÐ.

Ñ¨ÃÂ£Ãø °õÀó¾À𽠀¢Ãî°¨É¸û

ÌÆó¨¾¸Ç¢ý Ñ¨ÃÂ£Ãø ¿ýÈ¡¸ §Å¨Ä ¦°öÅ¾ý ãÄõ §¾¨ÅÂüÈ ÍÃó¾ ¿£÷ ¦ÅÇ¢§ÂüÈôÀÎ¸¢ýÈÐ.«Ú¨Å °¢¸¢î¨°ìÌ À¢ÈÌ °¢Ä ÌÆó¨¾¸ÙìÌ Ñ¨ÃÂ£Ãø °õÀó¾Á¡É §¿¡ö¸û ¯ÕÅ¡¸¢ §ÁüÜÈ¢Â þÂøÒ ¿¢¨Ä Á¡È¢ Å¢Î¸¢ýÈÉ.þó¾ ¿¢¨Ä¨Â Á¡üÈ ÁÕóÐ, Á¡ò¾¢¨Ã¸û ¾Å¢È ãîÍ ÀÂ¢ü°¢Ôõ Á¢¸ Óì¸¢ÂÁ¡É ÀíÌ Å¸¢ì¸¢ýÈÐ.

ãîÍ ÀÂ¢üî°¢Â¢É¡ø ²üÀÎõ ¿ý¨Á¸û

- ¯¾ÃÅ¢¾¡Éõ,ÁüÚõ þ¾Ã Ñ¨ÃÂ£Ãø ¾¨°¸û ÅÖÅ¡ì¸ôÀÎ¸¢ýÈÉ.
- Ñ¨ÃÂ£ÃÄ¢ø ¾í¸¢ÔûÇ §¾¨ÅÂüÈ ÍÃóÐûÇ ¿£÷ ¦ÅÇ¢§ÂüÈôÀÎ¸¢ýÈÉ.
- Ñ¨ÃÂ£Ãø ÁüÚõ Á¡÷ÒÜÎ þÄÌÅ¡¸ þÂí¸ ¦°ö¸¢ýÈÐ.
- þÃò¾µð¼õ, ÁüÚõ À¢Ã¡½Å¡Ô «¾¢¸¡¢ì¸ôÀÎ¸¢ýÈÉ.
- ãîÍ ÀÂ¢ü°¢Â¢É¡ø ÌÆó¨¾ ¦°ª¸¡¢ÂÁ¡¸×õ, Å¢¨ÇÂ¡ðÊø ®ÎÀ¡Î ²üÀ¼×õ ¯¾Å¢ Ò¡¢¸¢ýÈÐ.
- ¾¨° ¿¡÷¸û ¯Ú¾¢ ¦°öÂôÀÎ¸¢ýÈÉ.

¦°Âø Ó¨È Å¢Çì¸õ

ÌÆó¨¾¸û, ¾¡öÁ¡÷¸û ÁüÚõ ÀÃ¡Á¡¢ôÀÅ÷¸éìÌ «Ú¨Å °¢¸¢î¨°ìÌ Óý ãîÍ ÀÂ¢ü°¢ ¦°öÂ ¦°Âø Ó¨È Å¢Çì¸õ «Ç¢ì¸ôÀð¼Ð.ãîÍ ÀÂ¢ü°¢ ¦°öÂ °ÐÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎ ¯À¸Ã½õ ÀÂýÀÎò¾ôÀð¼Ð. þó¾ ¯À¸Ã½õ «Ú¨Å °¢¸¢î¨°ìÌ À¢ý 24 Á½¢ §¿Ãò¾¢üÌ À¢ÈÌ ¦°öÂ «ÛÁ¾¢ì¸ôÀð¼Ð.ÀÂ¢ü°¢ ¦°öÔõ Óý , ÁüÚõ À¢ý ÌÆó¨¾Â¢ý Ñ¨ÃÂ£Ãø °õÀó¾ôÀð¼ Á¾¢ôÀ£Î¸û «Çì¸ôÀð¼É.þôÀÂ¢ü°¢ ´Õ ¿¡¨ÇìÌ 4 Ó¨È Å£¾õ ¦¾¡¼÷óÐ 5 ¿¡ð¸ÙìÌ «Ç¢ì¸ôÀð¼Ð.6¬õ ¿¡û ÁÚÓ¨È Ñ¨ÃÂ£Ãø °õÀó¾Á¡É Á¾¢ôÀ£Î¸û «ÇÅ¢¼ôÀðÎ ÀÂ¢ü°¢ìÌ Óý ÁüÚõ À¢ý Á¾¢ôÀ£Î¸û µôÀ¢Î¾ø ¦°öÂôÀð¼É.

°Ð ÌÆø §À¡ýÈ ¯À¸Ã½ò¾¢ý ¿ý¨Á¸û

- Á¢¸ Ì¨Èó¾ Å¢¨Ä, ¯Â÷¾ÃÁ¡ÉÐ.
- ±ø§Ä¡Ã¡Öõ ÀÂýÀÎò¾ÜÊÂÐ.

- ¬ö× Ü¼õ §¾¨ÅÂ¢ø¨Ä.
- ±¾¢÷ Å¢¨Ç×¸û þø¨Ä.
- Á¢¸ ±Ç¢¾¢ø ¦°öÂÜÊÂÐ.
- ¸ñ¸¡½¢ôÒ ±Ð×õ §¾¨ÅÂ¢ø¨Ä.

INFORMATION TO PARTICIPANTS

Title of the study : " A study to assess the effectiveness of blowing tarty whistle as a play way method of breathing exercise on prevention of post –operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at institute of child health and hospital for children" Chennai.

Investigator:

Rajendran Shanthi
M.Sc (N) 1st year
College of Nursing
M.M.C

Name of Participant:

This study is conducted in Institutes of child and hospital for children, Chennai – 08. Your child is invited to take part in this study. The information in this document is meant to help you decide your child whether or not to take part. Please feel free to ask if you have any queries or concerns.

What is the purpose of this study?

Healthy children brought up in healthy surroundings not only are source of joy to everyone, but will be India's greatest resource tomorrow. Children are not 'little adults' they are in a dynamic process of growth and development, and are particularly vulnerable to acute and chronic effects of pollutants in their environmental, which leads to diseases like acute respiratory infections(ARI), diarrhoea etc. Among these infectious diseases ARI is one of the leading causes of mortality and morbidity in young children

This research is conducted to evaluate the effectiveness of blowing tarty whistle among children (6 -12 years) underwent surgery in selected post operative ward at Institute of Child Health and Hospital for Children, Chennai.

We have obtained permission from the Institutional Ethics Committee.

The study design

All children in this study will be divided into 2 groups. Your child will be assigned to either of the groups. One will receive the standard treatment & the group will receive deep breathing exercise by using blowing tarty whistle.

Study Procedures

Permission to conduct study from institutional Ethics committee
The investigator will obtain the permission prior to data collection from concerned authority (Department of surgery at ICH). Mothers of children in post operative wards will be explained about the study procedure.

- The investigator will obtain informed consent.
- Children will be randomized to either experimental or study group
- Children's respiratory status will be assessed on prior to the post operative day in both for experimental group and control group.
- The experimental group will be given Blowing tarty whistle as a breathing exercise four times a day 10 breaths for 5 days.
- The respiratory parameter in both group at pre and post test will be assessed by respiratory assessment scale.

Possible benefits to your child

Blowing tarty whistle as play way method of deep breathing exercise enhance the respiratory functions and reduce the future risk of developing complications due to general anesthesia.

Possible benefits to other people

The results of the research may provide benefits to the society in terms of using tarty whistle by cost effectiveness and create interest to use effectively by children those who are undergone abdominal surgery in future.

Confidentiality of the information obtained from you

You have the right to confidentiality regarding the privacy of your child medical information (personal details, results of physical examinations, investigations, and your medical history). By signing this document, you child will be allowing the research team investigators, other study personnel, sponsors, institutional Ethics Committee and any person or agency required by law like the Drug Controller General of India to view your child data, if required.

The information from this study , if published in scientific journals or presented at scientific meeting s, will not reveal your child identity.

How will your decision to not participate in the study affect you?

Your decision not to participate in this research study will not affect your child medical care or your relationship with the investigator or the institution. Your child will be taken care of and your child will not lose any benefits to which your child is entitled.

Can you decide to stop participating in the study once you start?

The participation in this research is purely voluntary and you have the right to withdraw your child this study at any time during the course of the study without giving any reason. However, it is advisable that you talk to the research team prior to stopping the treatment/discontinuing of procedures etc.

The results of this study will be informed to you at the end of the study.

Signature of Investigator Signature of Parent / Guardian

Date Date

INFORMED CONSENT FORM

"A study to assess the effectiveness of blowingtarty whistle as a play way method of breathing exercise on prevention of post –operative respiratory problems among the children age group of 6-12 years who underwent abdominal surgery in selected post operative ward at institute of child health and hospital for children" ,Chennai.

Name of the Participant:

I_____ have read the information in this form (or it has been read to me. I was free to ask any questions and they have been answered. I am over 18 years of age and, exercising my free power of choice, hereby give my consent to be included as a participant in this study.

1. I have read and understood this consent form and the information provided to me
2. I have had the consent document explained to me.
3. I have been explained about the nature of the study
4. I have been explained about my rights and responsibilities by the investigator.
5. I am aware of the fact that I can opt out of the study at any time without having to give any reason and this will not affect my child future treatment in this hospital.
6. I hereby give permission to the investigators to release the information obtained from my child as result of participation in this study to the sponsors.

Regulatory authorities. Govt. agencies and IEC.I understand that they are publicly presented.

7. I have understand that my child identity will be kept confidential if my data are publicly presented.

8. I have had my questions answered to my satisfaction.

9. I have decided for my child to by in the research study.

I am aware that if I have any question during this study. I should contact the investigator. By signing this consent form I attest that the information given in this document has been clearly explained to me and understood by me, I will be given a copy of this consent document.

1. Name and signature / thumb impression of the Parent / Guardian (or legal representative if participant incompetent)

Name _____ Signature

_____Date_____

1. Name and Signature of impartial witness (required for illiterate Parent / Guardian

Name _____ Signature

_____Date_____

Address and contact number of the impartial witness.

Name and Signature of the investigator or his representative obtaining consent.

Name _____ Signature

_____Date_____

¬Ã¡öî°¢ ¾¸Åø ¾¡û

¬Ã¡öî°¢ ¾¨ÄôÒ :

¬Ã¡öî°¢ ¾¨ÄôÒ °ÐÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎô ¦À¡Õ¨Ç ¯À§Â¡¸¢òÐ ÌÆó¨¾¸Ùì (6-12 ÅÂÐ Å¨Ã) ÅÂ¢Ú °õÀó¾ôÀð¼ «Ú¨Å °¢¸¢î¨°ìÌô À¢ý ²üÀÎõ Å¢¨Ç×¸¨Ç ¾ÎôÀ¾ü¸¡¸ ¦°öÔõ ¬ö×Ó¨È .

¬öÅ¡Ç÷ : Ã¡§ƒó¾¢Ãý °¡ó¾¢

Àí§¸üÀ¡Ç÷ :

þó¾ ¬ö× «ÃÍ ÌÆó¨¾¸û ¿Äõ ÁüÚõ ÌÆó¨¾¸û ÁÕòÐÅÁ¨ÉÂ¢ø ¿¨¼¦ÀÈ ¯ûÇÐ. ¿£í¸û ¯í¸û ÌÆó¨¾¨Â þó¾ ¬öÅ¢ø Àí§¸ü¸ ¿¡í¸û Å¢ÕõÒ¸¢§È¡õ. þ¾¢ÖûÇ ¾¸ÅÄ¢ý «ÊôÀ¨¼Â¢ø þó¾ ¬öÅ¢ø Àí§¸üÀ¾¡ «øÄÐ §Åñ¼¡Á¡ ±ýÚ ¿£í¸û ÓÊ× ¦°öÐ ¦¸¡ûÇÄ¡õ. ¯í¸ÇÐ °ó§¾¸í¸¨Ç ±í¸Ç¢¼õ §¸ðÎ ¿¢Å÷ò¾¢ ¦°öÐ ¦¸¡ûÇÄ¡õ.

<u>þó¾ ¬öÅ¢ý §¿¡ì¸</u>õ :

ÌÆó¨¾¸û ÅÂ¢Ú °õÀó¾ôÀð¼ «Ú¨Å °¢¸¢î¨°ìÌ À¢ÈÌ ¦ÀÕõÀ¡Öõ Ñ¨ÃÂ£Ãø °õÀó¾ôÀð¼ À¢ÃîÍ°¨É¸ÙìÌ ¬Ç¡¸¢ýÈ¡÷¸û.þ¾É¡ø þÈôÒ Å¢¸¢¾õ «¾¢¸Á¡¸ ¯ûÇÐ.þÅü¨È ¾Îì¸ Àæý, Š¨À§Ã¡¦ÁðÊ¡¢,¬¸¢Â ¦À¡Õð¸û ¯À§Â¡¸¢ì¸Àð¼É.«§¾ §À¡ýÚ °ÐÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎ ¦À¡Õ¨Ç ¯À§Â¡¸¢òÐ ãîÍ ÀÂ¢ü°¢ ¦°öÐ «Ú¨Å °¢¸¢î¨°ìÌ À¢ÈÌ ²üÀ¼ÜÊÂ Ñ¨ÃÂ£Ãø °õÀóò¾Àð¼ À¢ÃîÍ°¨É¸¨Ç Ì¨Èì¸Ä¡õ ÁüÚõ Ñ¨ÃÂ£ÃÄ¢ý ¦°Âø ¾¢È¨É «¾¢¸¡¢ì¸Ä¡õ ±ýÀ¨¾ ¸ñ¼È¢Õõ ¬ö×.

þó¾ ¬öÅ¢üÌ þýŠÊðä°Éø ±ò¾¢¸ø ¸Á¢ðÊ °õÁ¾õ ¦ÀüÈ¢Õì¸¢§È¡õ.

¬öÅ¢ý ¦°Âø Ó¨È :

þó¾ ¬öÅ¢ø ¸ÄóÐ ¦¸¡ûÙõ ÌÆó¨¾¸û A ÁüÚõ B ±ýÚ þÕ ÌØì¸Ç¡¸ À¢¡¢ì¸ôÀÎÅ÷. A ÌØÅ¢ø þÕôÀÅ÷¸û ÅÆì¸Á¡É °¢¸¢î¨°Ôõ B ÌØÅ¢ø þÕôÀÅ÷¸û ÅÆì¸Á¡É °¢¸¢î¨°Ô¼ý, °Ð ÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎ ¦À¡Õ¨Ç ¯À§Â¡¸¢òÐ ãîÍ ÀÂ¢üî°¢Â¢¨ÉÔõ ¦ÀÚÅ÷.

þó¾ ¬öÅ¢ø «Ú¨Å °¢¸¢î¨°ìÌ Óý Ñ¨ÃÂ£ÃÄ¢ý ¾ý¨Á¨Â¨Â «È¢óÐ ¦¸¡ñ¼ À¢ÈÌ «Ú¨Å °¢¸¢î¨°ìÌ À¢ý Ó¾ø ³óÐ ¿¡ð¸ÙìÌ °Ð ÌÆø ãÄõ ãîÍ ÀÂ¢ü°¢ «Ç¢ì¸ôÀðÎ Ñ¨ÃÂ£ÃÄ¢ý ¾ý¨Á ¸ñ¼È¢ÂôÀÎ¸¢ýÈÐ. þó¾ þÕ §°¡¾¨É¸Ùõ ´ôÀ¢Î¾ø ãÄõ °Ð ÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎ ¦À¡Õ¨Ç ¦¸¡ñÎ ¦¸¡Îì¸ôÀÎõ ãîÍ ÀÂ¢ü°¢ ±ó¾ «ÇÅ¢üÌ Ñ¨ÃÂ£ÃÄ¢ý ¾ý¨Á¨Â §ÁýÀÎò¾¢ «Ú¨Å °¢¸¢î¨°ìÌ À¢ÈÌ ²üÀÎõ À¢ýÅ¢¨Ç×¸¨Ç ¾Îì¸¢ýÈÐ ±ýÀ¨¾ ¸ñ¼È¢ÂôÀÎ¸¢ýÈÐ.

¬öÅ¢É¡ø ²üÀÎõ ¿ý¨Á¸û:

þó¾ ¬öÅ¢ø ¾í¸û ÌÆó¨¾ ¸ÄóÐ ¦¸¡ûÅ¾ý ãÄõ ÌÆó¨¾Â¢ý Ñ¨ÃÂ£ÃÄ¢ý ¾ý¨Á §Áý¨ÁÀÎò¾ôÀðÎ «Ú¨Å °¢¸¢î¨°ìÌ À¢ÈÌ ²üÀÎõ Ñ¨ÃÂ£Ãø °õÀó¾ôÀð¼ À¢Ãî°¨É¸û ÅÃ¡Áø ¾ÎìôÀðÎ,ÁÕòÐÅÁ¨ÉÂ¢ø ¾í¸¢ °¢¸¢î¨° ¦ÀÚõ ¿¡ð¸Ùõ Ì¨Èì¸ôÀÎ¸¢ýÈÐ. §ÁÖõ,ÅÕí¸¡Äò¾¢ø «Ú¨Å °¢¸¢î¨° ¦°öÐ ¦¸¡ûÙõ ÌÆó¨¾¸éìÌõ þó¾ ¬ö× ¯¾Å¢Â¡¸ «¨ÁÔõ.

ÁÕòÐÅ °¢¸¢î¨°Â¢ý ¾¸Åø¸û ÌÈ¢ò¾ Å¢ÅÃí¸û

¯í¸û ÌÆó¨¾Â¢ý ÁÕòÐÅ °¢¸¢î¨° ÌÈ¢ò¾ ¾¸Åø¸û Ã¸°¢ÂÁ¡¸ À¡Ð¸¡ì¸ôÀÎõ (¦ÀÂ÷, ÁÕòÐÅ À¡¢§°¡¾¨É ÓÊ×, ÁÕòÐÅ ¬ö× ÓÊ×) þó¾ ¾¸Åø ¾¡Ç¢ø ¨¸¦ÂØò¾¢ÎÅ¾¢ý ãÄõ ¯í¸û ÌÆó¨¾Â¢ý ÀüÈ¢Â ÌÈ¢ôÒ¸§Ç¡, ±ÎòÐ ¦¸¡ñ¼ °¢¸¢î¨° Ó¨È¨Â ÀüÈ¢§Â¡ ¬öÅ¡Ç§Ã¡ þýŠÊðä°ý ±ò¾¢ì¸ø ¸Á£ðÊ¨Â °¡÷ó¾Å÷¸§Ç¡ §¾¨ÅôÀð¼¡ø «È¢óÐ ¦¸¡ûÇÄ¡õ. ±ýÚ °õÁ¾¢ì¸¢È£÷¸û.ÓÊ×¸¨Ç «øÄÐ ¸ÕòÐ¸¨Ç ¦ÅÇ¢Â¢Îõ §À¡§¾¡ «øÄÐ ¬öÅ¢ý §À¡§¾¡ ¾í¸ÇÐ ÌÆó¨¾Â¢ý ¦ÀÂ¨Ã§Â¡ «øÄÐ

«¨¼Â¡Çí¸¨Ç§Â¡ ¦ÅÇ¢Â¢¼Á¡ð§¼¡õ ±ýÀ¨¾Ôõ ¦¾¡¢Å¢òÐì ¦¸¡û¸¢§È¡õ.

þó¾ ¬öÅ¢ø ¾í¸û ÌÆó¨¾ ôí§¸ü¸¡Å¢ð¼¡Öõ ¿£í¸û ÅÆì¸Á¡É °¢¸¢î¨°¨Â ¦¾¡¼÷óÐ ¦ÀÈÄ¡õ.

þó¾ ¬öÅ¢ø Àí§¸üÀÐ ¾í¸Ù¨¼Â Å¢ÕôÀò¾¢ý §À¡¢ø ¾¡ý þÕì¸¢ÈÐ. §ÁÖõ ¿£í¸û ±ó§¿ÃÓõ ¾í¸û ÌÆó¨¾¨Â þó¾ ¬öÅ¢Ä¢ÕóÐ À¢ý Å¡í¸Ä¡õ ±ýÀ¨¾Ôõ ¦¾¡¢Å¢òÐì ¦¸¡û¸¢§È¡õ.

þó¾ °¢ÈôÒ °¢¸¢î¨°Â¢ý ÓÊ×¸¨Ç ¬öÅ¢ý §À¡§¾¡ «øÄÐ ¬öÅ¢ý ÓÊÅ¢ý §À¡§¾¡ ¾í¸éìÌ «È¢Å¢ô§À¡õ ±ýÀ¨¾Ôõ ¦¾¡¢Å¢òÐì ¦¸¡û¸¢§È¡õ.

¬öÅ¡Ç÷ ¨¸Â¡ôÀõ ¦Àü§È¡÷/
À¡Ð¸¡ÅÄ÷ ¨¸Â¡ôÀõ

§¾¾¢

ÍÂ ´ôÒ¾ø ÀÊÅõ

¬ö× ¾¨ÄôÒ:

¬Ã¡öî°¢ ¾¨ÄôÒ °ÐÌÆø §À¡ýÈ Å¢¨ÇÂ¡ðÎô ¦À¡Õ¨Ç ¯À§Â¡¸¢òÐ ÌÆó¨¾¸ÙìÌ (6-12 ÅÂÐ Å¨Ã) ÅÂ¢Ú °õÀó¾ôÀð¼ «Ú¨Å °¢¸¢î¨°ìÌô À¢ý ²üÀÎõ Å¢¨Ç×¸¨Ç ¾ÎôÀ¾ü¸¡¸ ¦°öÔõ ¬ö×Ó¨È .

¦ÀÂ÷: ÅÂÐ:

§¾¾¢: ¦ÅÇ¢§¿¡Â¡Ç¢ ±ñ:

_____ ±ýÀÅÃ¡¸¢Â ¿¡ý þó¾ ¬öÅ¢ý Å¢ÅÃí¸Ùõ «¾ý §¿¡ì¸í¸Ùõ ÓØ¨ÁÂ¡¸ «È¢óÐ ¦¸¡ñ§¼ý. ±ÉÐ °ó§¾¸í¸û «¨Éò¾¢üÌõ ¾Ìó¾ Å¢Çì¸õ «Ç¢ì¸ôÀð¼Ð.þó¾ ¬öÅ¢ø ÓØ Í¾ó¾¢ÃòÐ¼ý ±ý ÌÆó¨¾¨Â ÀíÌ¦¸¡ûÇ °õÁ¾¢ì¸¢§Èý

±ÉìÌ Å¢Çì¸ôÀð¼ Å¢„Âí¸¨Ç ¿¡ý Ò¡¢óÐ ¦¸¡ñÎ ¿¡ý ±ÉÐ °õÁ¾ò¨¾ò ¦¾¡¢Å¢ì¸¢§Èý. þî ÍÂ ´ôÒ¾ø ÀÊÅò¨¾ ÀüÈ¢ ±ÉìÌ Å¢Çì¸ôÀð¼Ð.

þó¾ ¬öÅ¢¨É ÀüÈ¢Â «¨ÉòÐ ¾¸Åø¸Ùõ ±ÉìÌ ¦¾¡¢Å¢ì¸ôÀð¼Ð. þó¾ ¬öÅ¢ø ±ÉÐ ÌÆó¨¾Â¢ý ¯¡¢¨Á ÁüÚõ Àí¸¢¨É ÀüÈ¢ «È¢óÐ ¦¸¡ñ§¼ý.

þó¾ ¬öÅ¢ø À¢È¡¢ý ¿¢÷Àó¾Á¢ýÈ¢ ±ý ¦°¡ó¾ Å¢ÕôÀò¾¢ý §À¡¢ø ±ý ÌÆó¨¾¨Â ÀíÌ ¦ÀÈ °õÁ¾¢ì¸¢§Èý ÁüÚõ ¿¡ý ±ý ÌÆó¨¾¨Â þó¾ ¬Ã¡öî°¢Â¢Ä¢ÕóÐ ±ó§¿ÃÓõ À¢ý Å¡í¸Ä¡õ.±ýÀ¨¾Ôõ «¾É¡ø ±ó¾ À¡¾¢ôÒõ ²üÀ¼¡Ð ±ýÀ¨¾Ôõ ¿¡ý Ò¡¢óÐ ¦¸¡ñ§¼ý.

þó¾¬öÅ¢ø ¸ÄóÐ ¦¸¡ûÅ¾ý ãøõ ±ý ÌÆó¨¾Â¢¼õ þÕóÐ ¦ÀÈôÀÎõ ¾¸Å¨Ä ¬öÅ¡Ç÷ þýŠÊðä°Éø ±¾¢ìì¸ø ¸Á¢ðÊÂ¢É¡¢¼§Á¡, «ÃÍ ¿¢ÚÅÉò¾¢¼§Á¡ §¾¨ÅôÀð¼¡ø À¸¢÷óÐ ¦¸¡ûÇÄ¡õ ±É °õÁ¾¢ì¸¢§Èý.

þó¾ ¬öÅ¢ý ÓÊ×¸¨Ç ¦ÅÇ¢Â¢Îõ§À¡Ð ±ÉÐ ÌÆó¨¾Â¢ý ¦ÀÂ§Ã¡, «¨¼Â¡Ç§Á¡ ¦ÅÇ¢Â¢¼ôÀ¼¡Ð ±É «È¢óÐ ¦¸¡ñ§¼ý.þó¾ ¬öÅ¢ý Å¢ÅÃí¸¨Çì ¦¸¡ñ¼ ¾¸Åø ¾¡¨Çô ¦ÀüÚì ¦¸¡ñ§¼ý.

þó¾ ¬öÅ¢ø Àí§¸üÌõ ¦À¡ØÐ ²§¾Ûõ °ó§¾¸õ ²üÀð¼¡ø, ¯ð§É ¬öÅ¡Ç¨Ã ¦¾¡¼÷Ò ¦¸¡ûÇ §ÅñÎõ ±É «È¢óÐ ¦¸¡ñ§¼ý.

þîÍÂ ´ôÒ¾ø ÀÊÅò¾¢ø ¨¸¦ÂØò¾¢ÎÅ¾¢ý ãøõ þ¾¢ÖûÇ «¨ÉòÐ Å¢„Âí¸Ùõ ±ÉìÌ ¦¾Ç¢Å¡¸ Å¢Çì¸ôÀð¼Ð ±ýÚ ¦¾¡¢Å¢ì¸¢§Èý ±ýÚ Ò¡¢óÐ ¦¸¡ñ§¼ý. þîÍÂ ´ôÒ¾ø ÀÊÅò¾¢ý ´Õ ¿¸ø ±ÉìÌ ¦¸¡ñÎì¸ôÀÎõ ±ýÚ ¦¾¡¢óÐ ¦¸¡ñ§¼ý.

¦Àü§È¡÷/À¡Ð¸¡ÅÄ÷ ¨¸Â¡ôÀõ

§¾¾¢:

¬öÅ¡Ç÷ ¨¸Â¡ôÀõ

§¾¾¢:

	Respiratory rate		pulse rate		skin temperature		chest retraction		use of accessory muscles		cough		air entry		dyspnea		breath sounds		oxygen saturation	
Sample No	Before	DAY 5	Before	DAY 5	Before	D 5	Before	DAY 5	Before	DAY 5	Before	DAY 5	Before	DAY 5	Before	DAY 5	Before	DAY 5	Before	DAY 5
	Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)		Intervention (DAY 1)	
E1	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0
E2	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0
E3	0	0	0	0	0	0	1	0	0	0	1	0	2	1	0	0	0	2	0	0
E4	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	1	0	0
E5	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
E6	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	0	1	0	0
E7	0	0	0	0	0	0	0	0	0	0	1	0	1	1	0	0	1	2	0	0
E8	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0
E9	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	1	0	0
E10	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
E11	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
E12	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0
E13	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	0	0
E14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

E16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E17	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
E18	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E19	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E21	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
E22	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
E23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0
E26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E29	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
E30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

C1	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C2	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	2	0	0
C3	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
C4	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0
C5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C6	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C7	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C8	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C9	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C10	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C11	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C13	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0	0	1	0	0
C14	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
C15	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	2	0	0
C16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C17	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	2	0	0
C18	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0

C19	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
C20	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0
C21	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0
C22	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C24	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C25	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C26	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	1	0	0
C27	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C28	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C29	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0
C30	0	0	0	0	0	0	0	0	0	0	0	1	0	1	0	0	0	1	0	0

Age	Sex	primary care giver	educational status	monthly income	area of living	type of surgery	weight	previous health history
A	a	a	b	a	a	a	a	a
B	a	a	b	a	a	a	a	a
C	a	a	b	b	b	b	a	a
B	a	a	a	a	a	a	b	a
A	a	a	a	b	a	a	a	a
A	a	a	a	a	a	a	a	a
B	b	a	b	a	a	a	b	c
C	a	a	a	a	a	a	b	b
A	b	a	a	a	a	a	a	a
B	b	a	a	a	a	a	a	c
C	b	a	a	a	a	a	a	c
C	a	a	a	a	a	a	a	c
B	b	a	b	b	b	b	a	a
A	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
C	b	a	b	a	b	b	a	c
B	a	a	a	a	a	a	a	c
A	a	a	a	b	b	a	a	a
A	a	a	b	b	b	b	b	b
C	a	a	b	a	a	a	a	c
B	a	a	a	c	b	a	b	a
A	a	a	b	a	a	a	a	a
C	a	a	a	a	a	a	a	b
C	a	a	b	b	b	b	a	a
B	a	a	b	b	b	b	a	a
C	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
C	a	a	a	a	a	a	a	a
B	a	a	a	a	a	a	b	b
A	b	a	a	a	a	a	a	a
B	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
C	b	a	a	b	a	a	a	b

C	a	a	a	b	a	a	a	a
C	a	a	a	a	a	a	a	a
B	a	a	a	a	a	b	b	c
B	b	a	b	b	b	b	a	c
A	a	a	a	a	a	a	a	a
C	a	a	a	a	a	a	a	a
C	a	a	a	a	a	a	a	a
B	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
C	a	a	b	b	b	b	b	c
B	a	a	b	a	b	b	a	a
C	a	a	a	a	a	a	a	a
C	a	a	a	a	a	a	a	a
B	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
A	a	a	a	b	b	c	a	a
C	a	a	a	b	b	c	a	a
C	a	a	b	c	b	c	a	a
A	a	a	a	b	a	a	a	a
A	a	a	a	a	a	a	a	a
A	a	a	a	a	a	a	a	a
B	b	a	b	b	b	a	a	c
C	b	a	b	b	a	a	b	c
A	a	a	a	a	a	a	a	a
A	b	a	a	c	c	c	a	b
B	a	a	a	a	b	b	b	c
A	a	a	a	a	a	a	a	a